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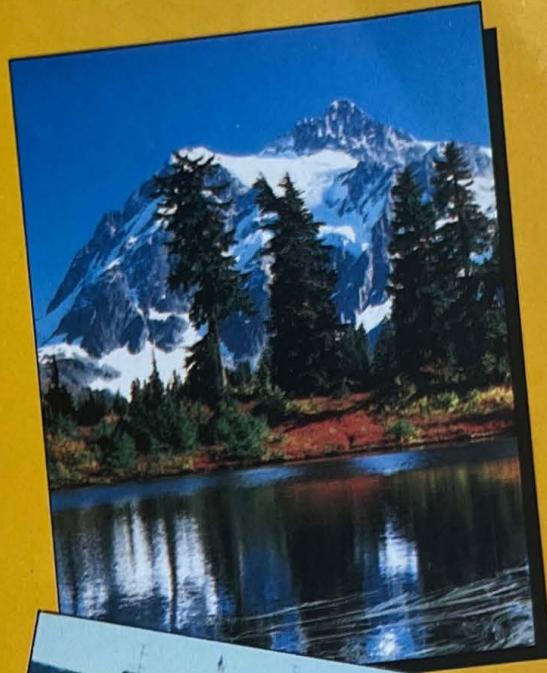


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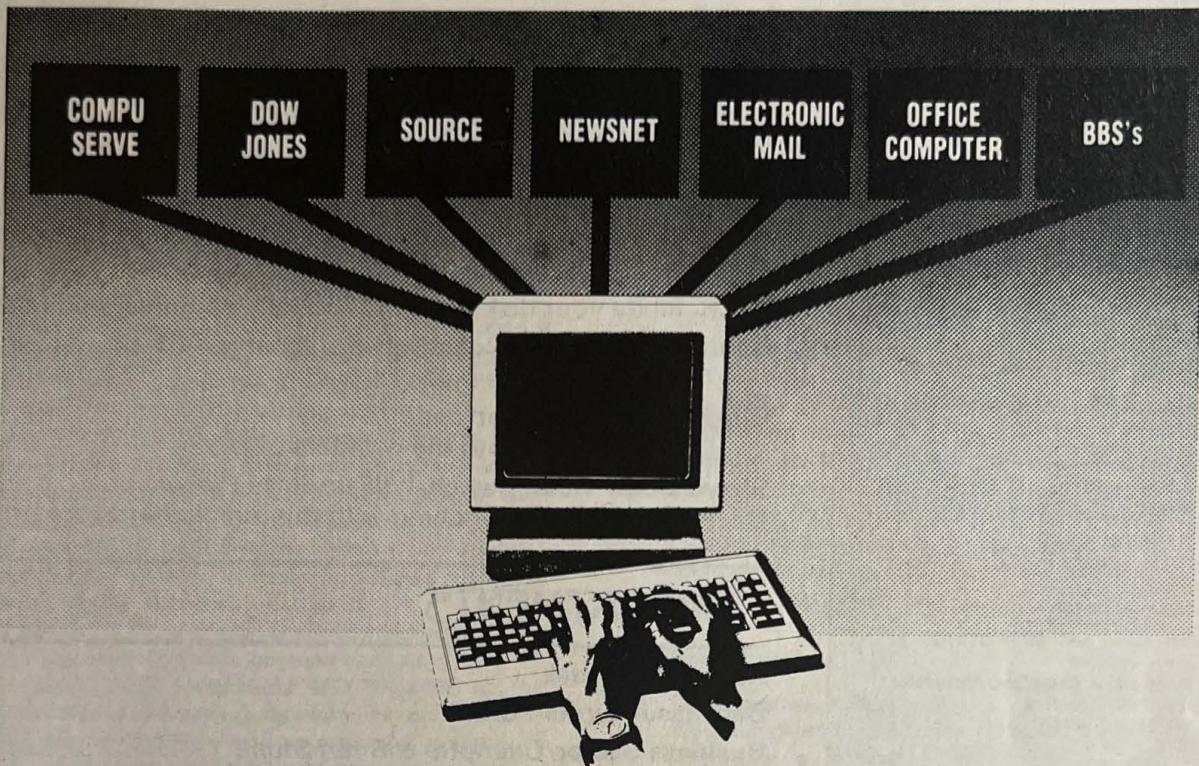
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The Monthly Magazine for
Sanyo Personal Computer Users

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■ The small disk symbols appearing beside features and regular columns indicate that the program listings with those articles are on this month's **SOFT SECTOR ON DISK**, ready to LOAD and RUN. For full details, see the **SOFT SECTOR ON DISK** ad on Page 6.



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SOFT SOAPBOX

October, for most, is a month for Halloween, hobgoblins, ghouls and ghosts. For SOFT SECTOR, it's a month for hardware and graphics. These two topics seem to go hand in hand because they can both be considered a craft. One must certainly be skilled to perform some of the delicate hardware modifications found in SOFT SECTOR, and one must be artistically inclined to produce quality graphics designs.

When the Sanyo MBC-550 was first introduced, one of its major selling points — besides being an MS-DOS machine at an incredibly low price — was its graphics capabilities. At SOFT SECTOR, we regularly receive submissions and letters from readers praising this feature of the Sanyo. In fact, if we had to pick the most commonly used phrase describing the Sanyo 550, it would be, "The Sanyo has outstanding graphics capabilities." So, we think it only fitting to devote an issue of SOFT SECTOR to graphics.

Computer graphics, as we well know, have come a long way over the past few years and are now an integral part of successful programming. A commercial program designed with eye-catching graphics is much more likely to sell than a program with ho-hum graphics or none at all.

Something fairly new on the market is the Enhanced Graphics Adapter. More and more, we are seeing EGA boards that offer increased resolution,

more colors — which only come into use when using programs designed to work with EGA boards — and better defined text characters onscreen.

The 550, as you know, comes with its own unique graphics features, and the 675, 775 and 885 come with standard IBM color-graphics capabilities. The 990, however, has none of this, and those of you who own a 990 or are considering buying one might also want to consider an EGA board to meet your graphics needs.

One problem, though, is the fact that most graphics programs are designed to work with standard IBM graphics, and relatively few are designed to work with the EGA boards. Several of the larger software companies, however, are beginning to crank out programs to be used with the EGA boards. If excellent graphics are something you look for when buying a computer, you'll definitely want to check one out.

Our other theme this month is hardware, and there are a couple of modifications in this issue that, once done, will save you much time and many headaches. We realize, however, that many of our readers are not used to working with a soldering iron or taking their machines apart, so be careful! Remember, too, if your machine is still under warranty, opening the cabinet of your computer automatically voids the warranty.

We would like to welcome all the readers who have recently joined our MS-DOS SIG on the Delphi network. Not only is the Sanyo a great value with unique features, so is the MS-DOS SIG. It is another resource for Sanyo users where you can find answers and solutions to your questions and problems. If you haven't signed on to see what's there, do so. You'll find it's a real treat!

— Belinda Kirby

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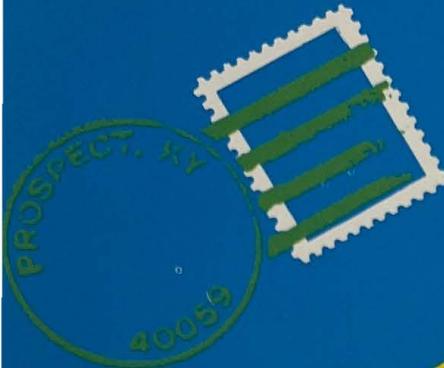
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LETTERS TO THE EDITOR

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Editor:

I am the owner of a Public Query Interface system (PQI). This system runs on two Sanyo MBC-555s at 786K each. The PQI system allows the public to directly access information concerning local business and events, here in Ashland, Ore. The system is capable of updating the remote computer's information by modem. To do this, I have to be able to call the remote computer from the base computer, send the new, updated files to it, and then have the remote computer go to the system where a batch file takes over and reboots the computer which will then rerun the PQI software.

I have been happily using *Copylink* for more than a year now, and I really like it. So, I purchased a copy of *Copylink Plus* to run the communications for this system. *Copylink Plus* is a communications package that has its own programmable language, which probably makes it one of the most flexible packages available. One of its attributes is its ability to run another computer by remote control.

One would assume that with all of its flexibility, it would be capable of allowing the remote computer to leave *Copylink* and go to the system, but it doesn't. I called US Digital in Portland, Ore., and presented this situation to them. After some trial and error, and to their own surprise, they couldn't make the remote computer go to the system either. After a couple of days and several phone calls, they came up with a solution and here it is:

Create a file called BYE.DVC on the remote computer's disk. The following is what should be in the file:

LOCK OFF
IERROR OFF
MEMORY 09DEH OFFH this line is not in
AUTO OFF
BYE
SYSTEM

While in remote control, type RUN BYE at the remote computer's command prompt and you will disconnect the modem and send the remote computer to the system, which

can then reboot itself upon completing batch file.

I spent a huge amount of time hacking and wacking at the keyboard, flipping pages, and assuming that *Copylink Plus* would do as I expected.

I hope this letter will save somebody from the same headache I went through.

I also would like to add that the folks at US Digital were more than just helpful, they deserve a "Well done" for their expedient and courteous customer support, which I should have sought sooner than I did. A lesson well learned.

Robert Smith
Ashland, OR

SOFT SWITCH

Editor:

I read Lawrence Gill's letter (SOFT SECTOR, April '86, Page 57) with interest. I have a Radio Shack DWP-210 printer that I have been using with my Sanyo MBC-550 for about two years.

There is no hardware switch on any Radio Shack printer that I know of that will turn the line feeds on and off. There is a software switch, however, on mine. It is ESC NAC, 1B 15 Hex.

I wrote a program that turns the software switch "on" when you boot your computer. The only problem is that the printer must be turned on and be online at boot up for it to work.

The following is a program (written using DEBUG) that will turn the software switch "on":

```
A>DEBUG
-A
XXXX:0100 MOV AH,05
XXXX:0102 MOV DL,1B      (ESC Code)
XXXX:0104 INT 21
XXXX:0106 MOV DL,15      (NAC Code)
XXXX:0108 INT 21
XXXX:010A RET
XXXX:010B CONTROL-C
-RCX
CX 0000      (This message comes from
               DEBUG, not typed)
:21
-N TRS.COM
-W
WRITING 0021 BYTES      (This message
                           also comes
                           from DEBUG)
-Q
```

Lawrence may have to change the NAC code, but the program should work as is on his printer.

To call the program at boot up, write an

PAR
AVION

AUTOEXEC.BAT file using the COPY command.

A>COPY CON: AUTOEXEC.BAT
TRS
DATE
TIME
CONTROL-C

I hope this helps.

Timm Napravnik
Tinley Park, IL

EXCESSIVE MEMORY

Editor:

First, let me say I have enjoyed every issue of SOFT SECTOR that I have read. The reader comments and all the other information in the magazine have been most helpful. It may be familiarity, but I believe that all the improvements that have been made to *WordStar* in your magazine are the reason that it is still my favorite word processor.

With regard to running *CalcStar* or, for that matter, the *Install* program for any of the Star software on machines that have more than 512K of RAM, I have found a very simple solution. Simply install either a spooler or a RAM disk to reduce the available memory below 512K and run your programs. I have done this very effectively on my Wyse PC in my office.

Also, whenever you are running the *Install* program, do not use a disk that is nearly full or you will get an error. Make sure the disk has enough room for the entire .COM file that you are trying to install.

When using programs that will only run with the Video RAM Board, be sure to boot up with the video board DOS. Software such as *DS-DOS* is great for switching back and forth, but if you boot under *DS-DOS* and switch to the video, you can't run programs such as *MultiMate*. *MultiMate* will run on the Sanyo, but only if booted with the video DOS. The amount of available memory is the key here. *DS-DOS* does not alter the available memory when switched to the video board.

Peachtext will also run on the Sanyo, with the video board installed.

Some programs may be copied using *Copy II PC* or *Copy Write* on a computer that will run these programs, but some programs must be copied from the original. *dBASE III* and *Framework* are examples of these. A copy from the original will run (you can make any number of copies) but a copy of a copy gives you an error.

These comments may seem trivial to the experienced user, but I am still working my way through crashed disks and what have you.

Keep up the good work in SOFT SECTOR.
Charles J. Doyle
Fort Devens, MA

Editor's Note: Refer to "Input/Output" in this issue for a patch to the CalcStar Install program that allows CalcStar to work with more than 512K.

GRAPHICS BUT NOT SOUND

Editor:

Many thanks for producing all the fine articles in SOFT SECTOR that I have seen in the last two years. Your magazine is my most awaited item each month and has been my best resource for problem solving.

I am writing to see if you are aware of any BASIC compiler that is available for the Sanyo MBC-555 and is capable of handling graphics and sound. I have heard of *BAS-COM* through your article in SOFT SECTOR, August '84, but realize that graphics and sound are not supported. It seems that this would have been a good product to market, since everyone who has bought this machine has gotten a copy of BASIC with it and later abandoned it for its lack of speed, among other reasons. This meant learning some other complicated, structured language such as C or PASCAL.

Please let me know if such a compiler exists, since I have grown to like BASIC and don't wish to change if I can help it. If indeed none are available, please list those languages that will compile and utilize the MBC-555's graphics and sound capabilities and the company that markets them.

William Erik Genz
Jacksonville, FL

Editor's Note: There is a BASIC compiler available for the Sanyo 555 that supports graphics, but not sound. The program is ZBASIC and it's available for \$89.95 from Zedcor, Inc., 3438 N. Country Club Road, Tucson, AZ 85716; (602) 881-8101. You may want to check with Sanyo Business Systems Corp. to see if there is a compiler for the 555 that also supports sound. Their number is (201) 440-9300.

GOOD SHOW!

Editor:

I have been receiving your magazine and SOFT SECTOR ON DISK for nearly a year and have found it invaluable, not only for home use but also for use at work.

Recently, I was asked to present a paper at a Symposium on Dinitrogen Fixation held in Sydney, Australia. My invitation to present my paper was late in arriving and the organizers had presumed my acceptance. With such little time to prepare suitable illustrations for my presentation, I turned to

the programs in SOFT SECTOR and found *DataPlot*, September '85 by Michael Izzi to be the answer to my problem.

The program had to be altered in a few minor ways to make it more suitable for my material. The response of the audience to the Sanyo graphics and the computer presentation of the material passed all expectations. The image on the screen was photographed using professional Ektachrome (tungston) 160 ASA. Half a second at f5.6 gave a crisp image with bright colors against a black background.

Keep the good work up with SOFT SECTOR.

M.J. Trinick
Wanniassa, Australia

A CHALLENGING ADDITION

Editor:

Thank you for the excellent program, *RoboMath*, which appeared in the August '86 issue.

I have made some minor changes in the program which have made it more interesting. The following lines have been added:

```
325 TIME$="00:00:00"  
895 LOCATE 22,27:PRINT "It took you  
"TIME$" to rescue ROBO."
```

In order to give an opportunity to correct errors, I have changed lines 460 and 600 to read:

```
460 IF A+B=VAL(ANS) THEN GOSUB 650  
ELSE GOSUB 690:GOSUB 730:GOTO 390  
600 IF A-B=VAL(ANS) THEN GOSUB 650  
ELSE GOSUB 690:GOSUB 730:GOTO 530
```

I have found that these changes have made the program more interesting and challenging to my children.

P. Bruce Heal
Scarborough, Ontario

NO-STICK KEYS

Editor:

I, too, had sticky keys on my MBC-555. I solved it by taking the keyboard apart to expose the key plungers, and putting a drop of light oil (WD-40 or equivalent) in each plunger. I let it sit overnight, mopped up any excess with a lintless cloth and reassembled the board. I did this six months ago and all is great to date!

H. Martin Prather
Seattle, WA



Drawing With Computer-Ease

Etch 'n' Sketch

Remember those hours spent with an Etch A Sketch™ board as a child composing that exquisitely detailed drawing that your little sister would erase with never a glance? Whatever happened to those little red and silver magic drawing boards, anyhow?

They're still around, but to a great extent they have given way before the greater magic of the computer.

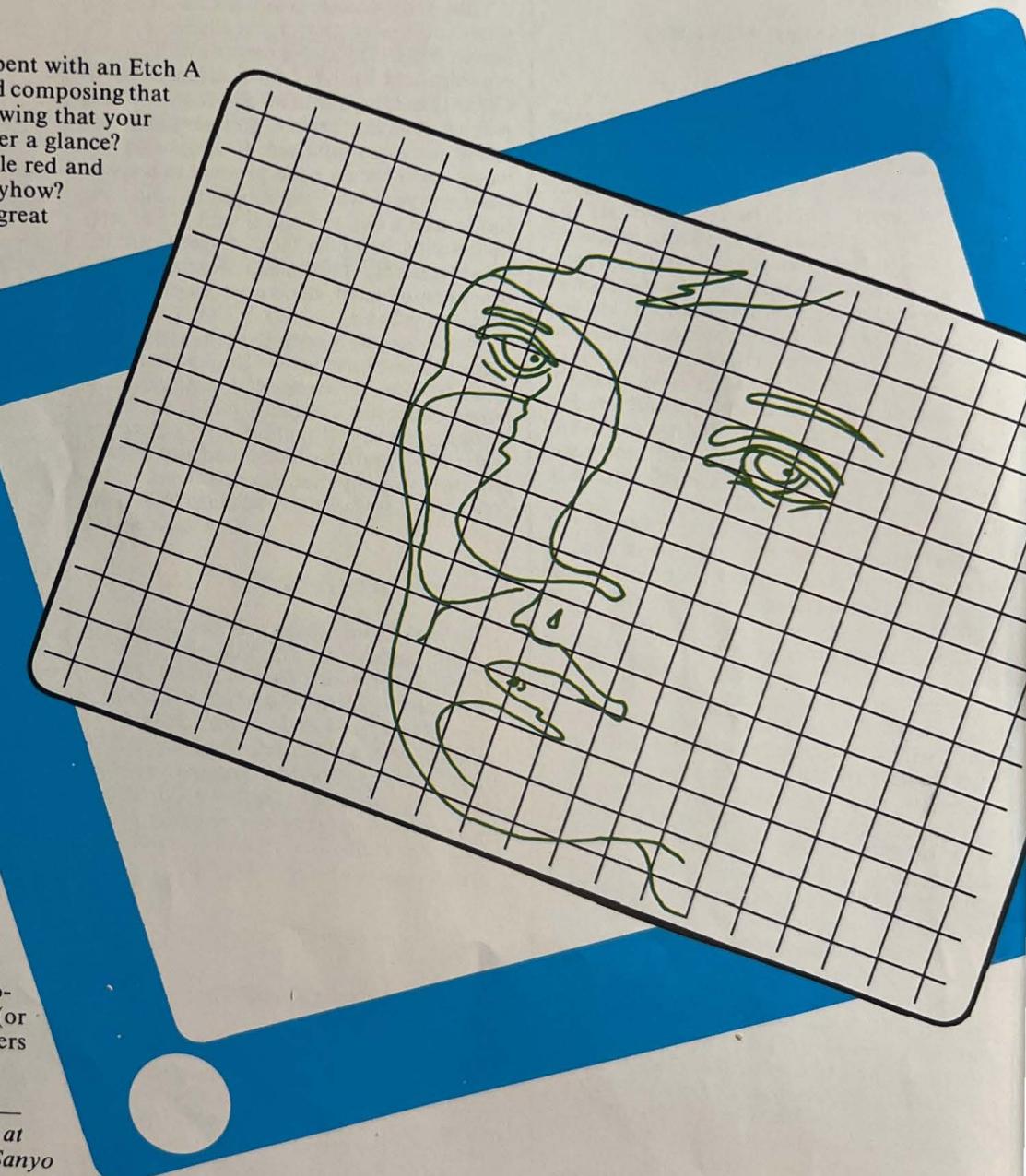
Children now spend hours fascinated with the abilities of the computer to respond to their commands.

Here's a simple, 100-line program that turns the computer into an *Etch 'n' Sketch* game that has fascinated my family for hours. Written very simply with many a REM, a beginning BASIC programmer may enjoy enhancing its capabilities and learning some programming skills in the process.

But, on the other hand, it will draw, erase and paint with ease. Used with any print screen program, it will enable the child (or adult) to show his artistry to others on paper.

Have fun!

Eugene Rothfuss is the pastor at Wesleyan Church, and uses his Sanyo daily. His wife, Joy, is currently pursuing a computer science degree and uses their Sanyo to do typing and layout. They may be contacted at 912 South Madison, Junction City, KS 66441; (913) 238-1583.



By Eugene and Joy Rothfuss

The listing: SKETCH.BAS

```

10 REM *****
20 REM ***** SKETCH IS AN ORIGINAL PROGRAM - 11/85 *****
30 REM *****
40 CLS
50 COLOR 3,4
60 GOSUB 260: REM .....SUB TO INTRODUCE PROGRAM.....
70 GOSUB 690: REM .....SUB TO SET STARTING POINT.....
80 REM .....MAIN PROGRAM ROUTINE.....
90 CLS:GOSUB 1010
100 IF INKEY$ = "" THEN 100
110 REM ... ROUTINE TO PUT INSTRUCTIONS ON BOTTOM OF SCREEN.....
120 COLOR 1,4
130 LOCATE 25,1:PRINT "
I-up; M-down; J-left; K-right;
A-ERASE COLOR; D-draw; E-erase; P-paint;C-clear; Q-que
ry; S-stop":COLOR 3,4
140 M$ = INKEY$
150 IF M$ = "I" THEN IF Y <> 0 THEN Y = Y-1
160 IF M$ = "M" THEN IF Y <> 199 THEN Y = Y+1
170 IF M$ = "J" THEN IF X <> 0 THEN X = X-1
180 IF M$ = "K" THEN IF X <> 639 THEN X = X+1
190 IF M$ = "E" THEN 780
200 IF M$ = "P" THEN 890
210 IF M$ = "C" THEN CLS: GOTO 70
220 IF M$ = "A" THEN 960
230 IF M$ = "Q" THEN CLS: GOSUB 410:GOTO 70
240 PSET (X,Y)
250 IF M$ <> "S" THEN 140 ELSE CLS: END
260 REM .....WELCOME SCREEN ROUTINE.....
270 LINE (25,25)-(615,175),7,B
280 LOCATE 6,10: PRINT "WELCOME TO . . ."
290 SYMBOL (75,80),"ETCH & SKETCH",5,5,3,0
300 LOCATE 18,30: PRINT "BY EUGENE AND JOY ROTHFUSS"
310 REM ....."Instructions?".....
320 LOCATE 20,25: INPUT "DO YOU WANT INSTRUCTIONS? (Y OR N) ";Z$
330 REM
340 REM
350 REM.....INSTRUCTIONS REPLY.....
360 REM
370 IF Z$ <> "Y" THEN CLS: RETURN
380 REM .....INSTRUCTIONS ROUTINE.....
390 REM
400 CLS
410 PRINT "INSTRUCTIONS"
420 PRINT " 1. Make sure your LOCK key is ON (RED LIGHT IS ON).
430 PRINT " 2. When you draw, use these 4 keys:"
440 LINE (300,53)-(340,68),3,B: LOCATE 8,41: PRINT "I"
450 REM
460 LINE (280,68)-(320,83),3,B: LOCATE 10,38: PRINT "J"
470 REM
480 LINE (320,68)-(360,83),3,B: LOCATE 10,43: PRINT "K"
490 REM
500 LINE (300,83)-(340,98),3,B: LOCATE 12,41: PRINT "M"
510 REM
520 FOR Z = 1 TO 4000: NEXT Z:CLS
530 LOCATE 14,5: PRINT "I goes up; M goes down; J goes left; K goes right."
540 PRINT
550 REM .....SPECIALTY KEY INSTRUCTIONS.....
560 PRINT "E turns the point of light off to allow skipping a little ways, or it
will erase if you run it back over your previous line."
570 PRINT
580 PRINT "D turns the point of light back on so that you can check to see where
you're at, or resume drawing."
590 PRINT

```

600 PRINT "P will fill in any enclosed area your lead dot is in with solid color
 . . .": COLOR 7,4:PRINT " WARNING! If you leave a gap in the enclosure, the col
 or will escape and obliterate the entire screen!" :COLOR 3,4
 610 PRINT " You can choose the color by pressing P again. The color will b
 righten until it reaches it's brightest, then cannot be changed...":PRINT "
 The beginning colors will vary."
 620 PRINT
 630 PRINT "S will stop the program any time you are in the Draw mode."
 640 PRINT "Q will give you instructions again anytime you are in Draw mode"
 650 PRINT "C will clear the screen and allow you to start over fresh"
 660 PRINT
 670 PRINT "Press any key to begin now. . . ."
 680 IF INKEY\$ = "" THEN 680 ELSE CLS: RETURN
 690 REMROUTINE TO CHOOSE STARTING POINT FOR DRAWING.....
 700 PRINT "The SANYO screen is 640 dots horizontally by 200 dots vertically;"
 710 PRINT:PRINT "choose two coordinates in this range, separated by a comma."
 720 PRINT:PRINT "For example, 320,100 is approximately the center of the scree
 n."
 730 PRINT :INPUT " Where would you like to start"; X,Y
 740 IF X > 639 THEN PRINT "TOO LARGE, TRY AGAIN":GOTO 730
 750 IF Y > 199 THEN PRINT "TOO LARGE, TRY AGAIN":GOTO 730
 760 REM
 770 RETURN
 780 REMBACK UP OR ERASE OR SKIP ROUTINE.....
 790 IF INKEY\$ = "" THEN 790
 800 QS = INKEY\$
 810 IF QS = "I" THEN IF Y < 0 THEN Y = Y-1
 820 IF QS = "M" THEN IF Y > 199 THEN Y = Y+1
 830 IF QS = "J" THEN IF X < 0 THEN X = X-1

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```

840 IF QS = "K" THEN IF X < 639 THEN X = X+1
850 PRESET (X,Y)
860 IF QS <> "D" THEN 800
870 IF QS = "D" THEN 140
880 REM
890 REM .....PAINT IN AN ENCLOSED AREA ROUTINE.....
900 PRESET (X,Y)
910 IF E > 7 THEN 920 ELSE 930
920 E = 0
930 PAINT (X,Y),E,3
940 E = E+1
950 GOTO 140
960 REM ....WHEN "A" IS PUSHED, IT CHANGES THE COLOR OF THE AREA .....
970 REM ....BACK TO THE BACKGROUND COLOR, ELIMINATING THE COLOR.....
980 REM .....IT WILL NOT ERASE THE DRAWING, OR THE BRIGHTEST COLOR .....
990 PAINT ((X+1),Y),4,3
1000 COLOR 3,4:GOTO 140
1010 FOR A = 1 TO 180 STEP 10
1020 LINE (1,A)-(640,A),1
1030 NEXT A
1040 FOR B = 1 TO 640 STEP 20
1050 LINE (B,1)-(B,180),1
1060 NEXT B:COLOR 3,4: RETURN
2500 FOR X = 1 TO 180 STEP 10
2510 LINE (1,X)-(640,X),1
2520 NEXT X
2530 FOR Y = 1 TO 640 STEP 20
2540 LINE (Y,1)-(Y,180),1
2550 NEXT Y

```

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FastScreen

Give your Sanyo MBC-550/555 a faster screen with FastScreen.

Our FastStar program solved the slow screen problem for users of WordStar. Now FastScreen does the same for most other programs as well. WordStar, CalcStar, EasyWriter, DataStar, BASIC, DOS commands, and most other programs will all do screen output so much faster you may think you have a new computer. And with FastScreen you don't have to give up color to get faster screen output.

FastScreen speeds up screen output on Sanyo MBC-550/555 computers by a factor of up to 15 times (1500%). The speed improvement varies from program to program, but for most programs you can expect screen output to be 2 to 3 times faster. These numbers are measured for such typical screen operations as writing a whole or partial page of text to the screen, displaying a menu, etc. About the only screen operations that FastScreen won't speed up are graphics. How can FastScreen do this? FastScreen completely takes over the job of writing characters to the screen, and uses very highly optimized software routines to get the job done much faster.

FastScreen is simple to install and use. FastScreen also provides an ASCII print screen capability, and a ramdisk program. FastScreen requires MS-DOS 2.11, and is not for use with the video board.

FastScreen costs only \$25, including first-class postage. (Outside North America add \$3 for airmail postage. NJ residents add \$1.50 sales tax.) To order send check or money order to:

PT Software
7-A Hopson Ave.
Little Falls, NJ 07424

FastStar users, upgrade to FastScreen for only \$15. Return original label from FastStar distribution disk to get upgrade price.

CORRECTIONS

Memo Writer

I was pleased to see my program "Memo Writer," in the February issue of SOFT SECTOR. Your editorial staff and art department did an exquisite job and I thank them.

I have, however, one minor correction that must be made. If you will notice, in lines 230, 250, 280 and 300, the character generated by GRAPH + 4 is printed rather than the character generated by SHIFT + backslash (\). I checked this with the actual version I sent you and it would seem that your staff made a typo. If entered as listed, the Epson RX-80 will print a '3'.

I hope this does not pose any inconvenience to your readers. Thank you for a great job.

*John S. Vandermeersch
Aylmer West, Ontario*

DRAW\$

There is a small problem with my program "DRAW\$" which appeared in the April '86 issue of SOFT SECTOR. As written, the circle command will only accept a single digit for the radius parameter. To correct this, change Line 10215 to read:

```
10215 IF AS1$="0" THEN RS=VAL
(RIGHT$(BITS$(IS),LS-1)):CIR
CLE(XS1,YS1),RS*SXS/4,,,CS:GOTO
10550
```

In reference to the "Putting Your Graphics On Paper" article in the May '86 issue of SOFT SECTOR: The green screen address in Line 20 of the program will vary according to the memory configuration of the machine:

```
&H1C00 for 128K
&H2C00 for 192K
&H3C00 for 256K
&H0C00 for 512K
```

*Ray C. Robinson
Lake Charles, LA*

Medical Records

Thank you for publishing my article and program "Doctor Up Your Medical

Records" in the April '86 issue of SOFT SECTOR.

Please note, however, that there is a typographical error which, if not corrected, will cause endless consternation for anyone who types in this program and follows the instructions given as in the printed article.

In the top paragraph of the center column of the article (the paragraph begun in the left column), the last two sentences contain the subtle, yet heinous, error. All double quote symbols must be replaced with braces as was correctly stated in the article I sent you.

Correct: All characters between { and } should be typed with the GRAPH key enabled. Don't type the { or }.

Incorrect in Magazine: All characters between "and" should be typed with the GRAPH key enabled. Don't type the "or."

Note: There should be spaces between the braces and the intervening words and the period at the end of the second sentence should lie after the right brace.

*William C. Nieberding
Fairview Park, OH*

There is a bug in the MED.BAS program ("Doctor Up Your Medical Records," SOFT SECTOR April, '86). If "Total the Data" is run more than once per session, "total" data for the first person and for the entire family will be inaccurate. This can be corrected by revising Line 2340 to read:

```
2340 FOR I = 0 TO PEOPLE
```

As written, the program places a rule through most of the data when it is printed on my Epson MX 80 F/T printer. The appearance of the printed output is greatly improved by changing lines 3100, 3140, 3160, 3310 and 3350. In each case, ESC\$"-0" should be replaced with ESC\$"--CHR\$(0).

*Eric Wiening
West Chester, PA*

Sanyo Synthesizer

The address given in the "Sanyo Synthesizer" listing in the June, '86 issue of SOFT SECTOR has been changed since submission of the program. The new address is: PTM Computer Applications, Rt.3, Box 461, Moneta, VA 24121.

*Paul T. Miller
Moneta, VA*

The Binary Banner:

Printing
Your
Own
Attention
Getters

By Fred Blechman
Soft Sector Contributing Editor

There are lots of occasions when a long banner with a special message is appropriate — "Welcome Home Mom," "Miss Hometown, USA" and "Happy Birthday Harvey" are typical. Clubs and organizations often need banners for displays and booths. Now, instead of hiring an artist, you can make such banners on your Sanyo MBC-555 and just about any printer.

This program has several useful features. You can select the character shapes from "tall and skinny" to "short and fat" — or any combination in between. You can use a printer capable of printing up to 255 characters on a line, and the banner characters will be centered between the top and bottom of the banner.

Although the program, as shown here, does not contain lowercase characters or punctuation, you can add any characters you want.

Running the Program

When you run the program you'll see an introduction to the program. Don't forget to turn on your printer and be sure it's ready to print, otherwise the program will "freeze" a little further on when it addresses the printer.

Fred Blechman, an acknowledged authority on home computers, has written several articles and books related to microcomputers. He is self-taught in electronics and computer BASIC programming and specializes in writing for beginners. Fred may be contacted at 7217 Bernadine Ave., Canoga Park, CA 91307; (818) 346-7024.

Selecting Character Width and Height

When you press ENTER, the screen clears and asks you to choose a character width (from 1 to 4, with 1 being the most narrow), then a character height (from 1 to 10, with 1 being the shortest). Enter your choice.

Since the characters are printed sideways on the paper, so you can have a banner of up to 255 characters in length, the references to "width" and "height" can be confusing.

The number you specify for width, multiplied by five, will be the number of printer lines used for each banner character. The number you specify for height, multiplied by seven, will be the number of character spaces on each printed line.

Centering

Next, you're asked how many characters your printer puts on one line. The most common printers normally use 80 characters per line, although they can be programmed (using switches or software commands) for more or less. If you want denser-looking copy, use more than 80 characters on a line, but your banner characters will "shrink" in height. You'll need to add a software command to the program (which I didn't do, since there is no standard command for the various

printer brands) or use an LPRINT statement to issue the appropriate commands to your printer before running this program.

In any case, the Sanyo MBC-550/555 will automatically issue a carriage return after the 80th character on a printer line unless otherwise "advised." Line 375 takes care of this with the WIDTH command, if needed.

The printing on the banner is automatically centered, and is controlled by Line 370 where a value is calculated and used as a TAB in Line 800.

Character Set

The data statements starting at Line 1000, contain the character designation in quotation marks followed by five numbers. These numbers are derived from a simple process using binary numbers.

If you request the computer to print a character that is not in one of the data statements, the program will stop at that point and indicate "Out of DATA in 450." Therefore, restrict yourself to the characters shown in the data statements.

You can add your own characters. Look at Figure 1, a 5-by-7 matrix with squares blacked in to represent the capital letter 'A'. Without getting into an explanation of "why," just total the "row values" of the filled squares for each column and you get

the "column values" shown in program data Line 1010. As another example Figure 2 shows how the data numbers for the capital letter 'B' are derived. Using this technique you can design any character you wish, such as lowercase and punctuation, and add them to the program statements.

If you decide to use a comma or question mark, you'll need to change the INPUT statement in Line 380 to LINE INPUT and add a question mark after the word "text."

You will not be able to use a quotation mark as the character designator on the data line itself since the computer will be confused by a quotation mark enclosed by two other quotation marks, and will stop with a "Type mismatch" error. Use some other keyboard symbol instead in the data statement, although the numbers on that data line can produce a quotation mark on the banner.

Program Modules

100 - 270	Program introduction
300 - 380	User inputs
400 - 730	Reducing DATA number to printer string
800 - 820	Printing subroutines
1000 - 1590	Character identification and DATA numbers.

ABOUT THE ONE-LINER CONTEST

The guidelines for the SOFT SECTOR One-Liner Contest are as follows:

Begin the program with a line number and end it in a single line. Anything else goes. Entries will be accepted in either Sanyo BASIC or GW-BASIC. Please include a printed listing, a title for the program and a short explanation of what it does.

Send your entry to:
The SOFT SECTOR One-Liner Contest
P.O. Box 385
Prospect, KY 40059

Winners of the one-liner contest will receive a copy of SOFT SECTOR ON DISK for the month in which their entry is published.

One Liner

STAR

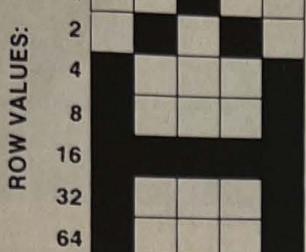
This program takes advantage of the Sanyo's spectacular graphics capabilities and its ability to generate random numbers. The program creates an eye-pleasing pattern on the screen using the LINE statement.

The equations inside the FOR/NEXT loop calculate two locations on the screen and connect them with a line. The resulting pattern is actually the graph of a polar equation with random numbers plugged into the variables. Each pattern will continue on the screen until the user presses a key, at which point a new pattern will begin.

```
1 LOCATE 1,1,0:COLOR RND*6+1,0:CLS:A=RND*50:B=RND*50:FOR J=0 TO 999 STEP .5:IF INKEY$<>"" THEN 1 ELSE R=2*SIN((A/B)*J):X=COS(J)*R*80:Y=SIN(J)*R*40:J=J+.5:S=2*SIN((A/B)*J):W=COS(J)*S*80:Z=SIN(J)*S*40:LINE(320+X,100-Y)-(320+W,100-Z):J=J-.5:NE XT
```

Michael Doeffer
El Cerrito, CA

TOP OF CHARACTER



ROW VALUES:

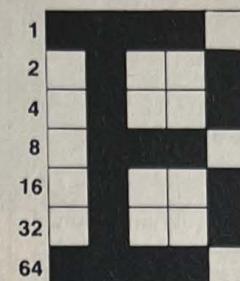
1				
2				
4				
8				
16				
32				
64				

COLUMN VALUES: 124 18 17 18 124

↓ ↓ ↓ ↓ ↓

1010 DATA 'A', 124, 18, 17, 18, 24 — PROGRAM LINE

Figure 1: 'A' matrix values



ROW VALUES:

1				
2				
4				
8				
16				
32				
64				

COLUMN VALUES: 65 127 73 73 54

↓ ↓ ↓ ↓ ↓

1020 DATA 'B', 65, 127, 73, 73, 54 ← PROGRAM LINE

Figure 2: 'B' matrix values

The listing: SANBANN.BAS

```

100 REM *****
110 REM *           "BINARY BANNER" *
120 REM *           For Sanyo MBC 550/555 *
130 REM *   (C) Copyright Fred Blechman 1986 *
140 REM *****
150 CLS:PRINT:PRINT TAB(30)"*** BANNER ***"
160 PRINT :PRINT "      This program will produce a custom banner, printing length
hwise on your"
170 PRINT "printer paper. When using an 80-column printer, the text is automatic
ally"
180 PRINT "centered between the top of the banner (right side of paper) and the
bottom"
190 PRINT "(the left side). If your printer uses more or less characters on a li
ne,"
200 PRINT "then enter that number in response to the screen prompt for proper"
210 PRINT "centering."
220 PRINT :PRINT "      You can select the relative width and height of the banne
r characters. "
230 PRINT "Upper-case letters A-Z, numbers 1-0, and a blank space, are provided
in DATA"
240 PRINT "statements. You can add additional DATA statements for any character
that can"
250 PRINT "be formed in a matrix 7-high by 5-wide....."
260 PRINT :PRINT TAB(20)"*** TURN ON YOUR PRINTER NOW! ***"
270 PRINT :PRINT TAB(15)"Press down-left arrow (ENTER) when ready....";:INPUT A
280
$  

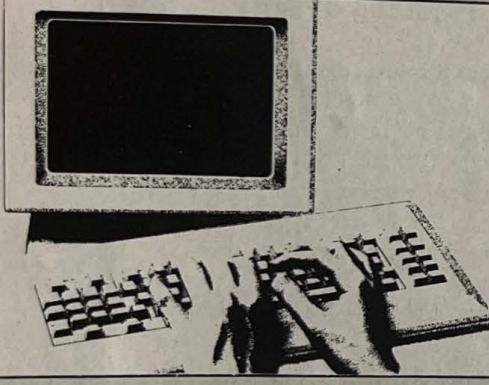
300 CLS
310 PRINT:INPUT"Choose a character WIDTH (1-4)";W
320 IF W<1 OR W>4 THEN PRINT"*** Out of range. Try again....***":GOTO 310
330 PRINT:INPUT"Choose a character HEIGHT (1-10)";H
340 IF H<1 OR H>10 THEN PRINT"*** Out of range. Try again....***":GOTO 330
350 PRINT:INPUT"Printer characters per line";CH
360 IF CH<H*7 THEN PRINT"!!Character height too high for this printer. Enter ne
w height....":GOTO 330
370 C=(CH-(7*H))/2:IF C=0 THEN C=1
375 IF CH>80 THEN WIDTH CH
380 PRINT:PRINT:INPUT"Banner text";M$
390 CLS: P$="":PRINT:PRINT"Printing banner....."
400 FOR L=1 TO LEN(M$)
410 PRINT
420 FOR L=1 TO LEN(M$)
430 A$=MIDS(M$,L,1)
440 PRINT A$;

```

Submitting Material

Contributions to SOFT SECTOR are welcome from everyone. We like to run a variety of programs that are useful/helpful/fun for other Sanyo owners.

• FORMAT: Unless the program accompanying your submission is less than 10 lines, we must have the program itself on disk. We will print out the listing to our specifications. We simply cannot take the time to key in (and debug our typing errors) material that is longer. Editorial copy can also be included on disk, using any of the word processors currently available for the Sanyo 550, 555, 675, 775, 885 or 995 series. However, please also include a double-spaced hard copy of your editorial material and hard copy of your program listing. Please do not send text in all capital letters; use upper- and lowercase. While it is a big help to us in typesetting to receive your article saved on disk using the ASCII option, it is not mandatory. But we must have, at the very least, a double-spaced hard copy of the article.



• WHAT TO WRITE: Anything with a practical application. If it interests you, it will probably interest a lot of others. However, we prefer articles with accompanying programs that can be entered and run. We can prepare finished tables, diagrams and schematics from your rough draft if you provide legible copy and full directions. We have a continuing need for short articles with short listings.

We do pay for submissions, based on a number of criteria. Those wishing remuneration should *so state* when making submissions.

For the benefit of those who wish more detailed information on making submissions, please send a self-addressed, stamped envelope (SASE) to: Submissions Editor, SOFT SECTOR, The Falsoft Building, P.O. Box 385, Prospect, KY 40059. We will send you comprehensive guidelines.

Please do not submit programs or articles currently submitted to another publication.

```
450 READ X$,L1,L2,L3,L4,L5
460 IF X$=A$ THEN GOTO 480
470 GOTO 450
480 X=L1: GOSUB 600
490 X=L2: GOSUB 600
500 X=L3: GOSUB 600
510 X=L4: GOSUB 600
520 X=L5: GOSUB 600
530 FOR R=1 TO W:LPRINT:NEXT R:RESTORE
540 NEXT L:WIDTH 80:END
600 IF X-64>=0 THEN GOSUB 810:X=X-64:GOTO 620
610 IF X-64<0 THEN GOSUB 820
620 IF X-32>=0 THEN GOSUB 810:X=X-32:GOTO 640
630 IF X-32<0 THEN GOSUB 820
640 IF X-16>=0 THEN GOSUB 810:X=X-16:GOTO 660
650 IF X-16<0 THEN GOSUB 820
660 IF X-8>=0 THEN GOSUB 810:X=X-8:GOTO 680
670 IF X-8<0 THEN GOSUB 820
680 IF X-4>=0 THEN GOSUB 810:X=X-4:GOTO 700
690 IF X-4<0 THEN GOSUB 820
700 IF X-2>=0 THEN GOSUB 810:X=X-2:GOTO 720
710 IF X-2<0 THEN GOSUB 820
720 IF X-1>=0 THEN GOSUB 810
730 IF X-1<0 THEN GOSUB 820
800 FOR R=1 TO W:LPRINT TAB(C)P$:NEXT R:P$="":RETURN
810 FOR R=1 TO H:P$=P$+A$:NEXT R:RETURN
820 FOR R=1 TO H:P$=P$+":":NEXT R:RETURN
1000 DATA " ",0,0,0,0,0
1010 DATA "A",124,18,17,18,124
1020 DATA "B",65,127,73,73,54
1030 DATA "C",62,65,65,65,34
1040 DATA "D",65,127,65,65,62
1050 DATA "E",127,73,73,65,65
1060 DATA "F",127,9,9,1,1
1070 DATA "G",62,65,65,73,121
1080 DATA "H",127,8,8,8,127
1090 DATA "I",0,65,127,65,0
1100 DATA "J",32,64,64,64,63
1110 DATA "K",127,8,20,34,65
1120 DATA "L",127,64,64,64,64
1130 DATA "M",127,2,12,2,127
1140 DATA "N",127,2,4,8,127
1150 DATA "O",62,65,65,65,62
1160 DATA "P",127,9,9,9,6
1170 DATA "Q",62,65,81,33,94
1180 DATA "R",127,9,25,41,70
1190 DATA "S",38,73,73,73,50
1200 DATA "T",1,1,127,1,1
1210 DATA "U",63,64,64,64,63
1220 DATA "V",7,24,96,24,7
1230 DATA "W",127,32,16,32,127
1240 DATA "X",99,20,8,20,99
1250 DATA "Y",3,4,120,4,3
1260 DATA "Z",97,81,73,69,67
1500 DATA "1",0,66,127,64,0
1510 DATA "2",114,73,73,73,70
1520 DATA "3",34,65,73,73,54
1530 DATA "4",24,20,18,127,16
1540 DATA "5",39,69,69,69,57
1550 DATA "6",60,74,73,73,48
1560 DATA "7",1,113,9,5,3
1570 DATA "8",54,73,73,73,54
1580 DATA "9",6,73,73,41,30
1590 DATA "0",62,81,73,69,62
```



SOFT TALK

The following products have recently been received by SOFT SECTOR, examined by our magazine staff and approved for the *Soft Sector Seal of Certification*, your assurance that we have seen the product and have ascertained that it is what it purports to be.



AUTOMENTOR is a software tool that easily adapts to existing PC hardware and software packages to create demos, interactive tutorials, training sessions, on-screen bit-mapped graphic presentations and even lets you automate tasks and prototype.

AutoMentor uses a technology called "Software Recording"™ which is memory resident and runs concurrently with any MS-DOS application. No programming is required and the menu user interface resembles a VCR control panel that uses terms like PLAY, RECORD and EDIT.

AutoMentor requires a Sanyo MBC-675, 775, 885 or 990 series computer. It is currently available for \$495 from Software Recording Corporation of America, 24 Professional Center Parkway, Suite 130, San Rafael, CA 94903; (415) 499-8766.

TOPHAT is an adapter board that expands the Sanyo MBC-990's 512K base memory to a full 640K. It features a 16-bit BUS for AT compatibles, parity checked RAM, configures as 128K or 384K to extend system RAM to 640K, uses standard 64K or 256K 120 or 150 nanoseconds RAMs and comes with a one-year warranty.

The TophAT board fits in one of the

AT-compatible slots. The 128K board is currently available for \$145 and the 384K for \$195. Both may be purchased from Boca Research, Inc., 6401 Congress Ave., Boca Raton, FL 33431; (305) 997-6227.

SURVIVORS is a strategy game. To win, you must fight warriors, mutants, radiation and the elements to claim your territory. Territories are divided into 50 sectors and you must send your warriors in to fight whoever or whatever rules each sector. After each attack, you either lose warriors or are given bonus warriors. You must also use whatever weapons you can obtain. After successfully claiming a new territory, you have access to the weapons and warriors of that territory.

Survivors is currently available for \$14.95 from Dougherty Enterprises, 3314 33rd Way, W. Palm Beach, FL 33407; (305) 689-3347.

T.V. BINGO BUSTER is a game that allows you to play up to 100 bingo cards at a time. Simply enter your card numbers at the prompt and type in the numbers called by the T.V.

T.V. Bingo Buster is currently available for \$14.95 from Dougherty Enterprises, 3314 33rd Way, W. Palm Beach, FL 33407; (305) 689-3347.

SALES REGISTER is a flexible point-of-sale software package that gives your microcomputer the power to operate as an electronic cash register, with the added advantage of keeping a running inventory of all inventory items in stock.

Sales Register consists of seven files: AUTOEXEC.BAT which automatically loads the program into computer memory upon system start up; SR.COM which loads PROG1.CHN into memory; PROG1.CHN which is the file that gives your computer the power to operate as an electronic cash register in daily sales transactions; PROG2.CHN which is used to create your

inventory data disk; PROG3.CHN which is used to print your daily, monthly, quarterly and yearly management reports; PROG4.CHN which is used to sort the inventory file on the category; and BKUP.BAT which is used to make backup copies of the inventory disk.

Sales Register Version 3.1 requires 256K and is currently available for \$495 from Avoyelles Business Machines, Box 144 Belledeau Road, Hessmer, LA 71341; (318) 563-4428.

EVEREX MINI MAGIC CARD is a memory expansion board for the true PC XT/AT compatibles: the Sanyo 675, 775, 885 and 990 series computers. It is a six-inch card that will expand the computer's memory to a maximum of 640K — perfect for use in machines with short slots and for users with no need for extra options on the board.

The Everex Mini Magic Card is sold without memory chips installed. Nine memory chips are placed in each of three banks, and the card allows the flexibility of using either 64K and/or 256K RAM chips in each bank.

Included with the board is a program for testing the RAM chips after the board has been installed.

The Everex Mini Magic Card (EV-138) is currently available for \$99 from Everex Systems, Inc., 47777 Warm Springs Blvd., Fremont, CA 94539; (415) 498-0728.

The *Seal of Certification* program is open to all manufacturers of products for Sanyo MBC-550/555, 675, 775 and 885 computers, regardless of whether they advertise in SOFT SECTOR.

By awarding a *Seal*, the magazine certifies the product does exist — that we have examined it and have a sample copy — but this does not constitute any guarantee of satisfaction. As soon as possible, these hardware or software items will be forwarded to SOFT SECTOR reviewers for evaluation.

S

The purpose of this program is to entertain and show off the color capabilities of the Sanyo. The program draws a series of identical pictures in a ring. A sample picture of a five-pointed star is incorporated into the program, but any picture may be created by the user within the allocated space. The pictures can be any one of the seven colors available on the Sanyo (presuming a black background) or each picture may be a different color, resembling a rainbow.

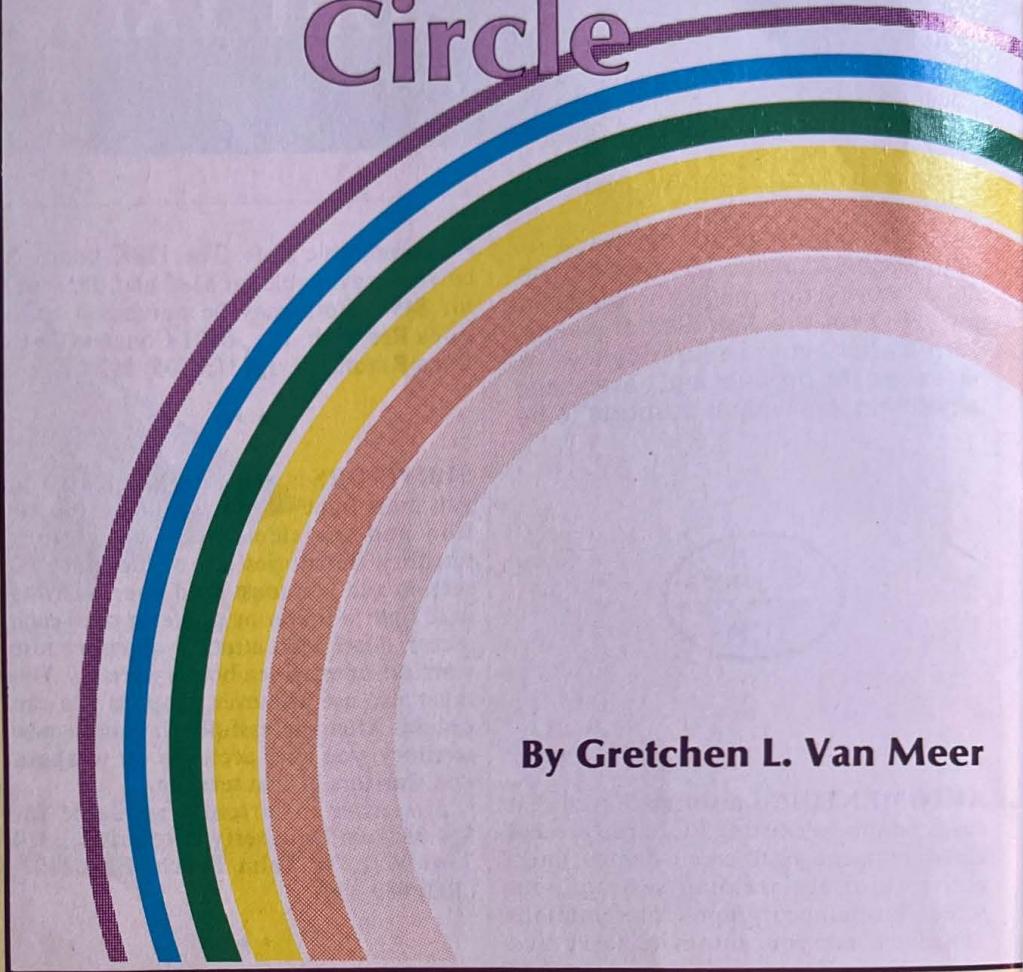
The user also has a choice of creating line drawings or filled areas, although the space to be filled is currently limited to the closed area around a point in the center of the allocated space (in other words, there is one optional PAINT command per copy of the picture). Possible uses of the program, for those with a color printer, include creating a circular picture frame, a Christmas wreath or a reproduction of the 13-star field of the original American flag.

The program takes a set of points as input (a sample set of points which draws a star is provided) in a limited area of the screen. Imagine a circle centered in the middle of the screen: The allocated area is a rectangle centered at a point on that circle at zero radians (the point farthest right on the circle as you face your screen). The picture is then reproduced at regular intervals clockwise around the circumference of this circle, making any number of copies specified by the user. Color selection is also by the user, with a choice of each picture the same color, or each picture a different color (the "rainbow" option). If the rainbow option is selected, each of the seven colors available on the Sanyo is used in succession up to the number of pictures requested. For more than seven pictures, the colors are repeated.

Interesting results can be obtained by using some strange combinations of numbers. For example, using the option of creating your own picture and telling the program that your picture consists of one point, which should be the recommended center point (450,200), produces a circle of dots. A large number of "pictures" gives something closely approximating a circle. Something I discovered by accident (when my 5-year-old daughter did an empty carriage return at the request for number of points) is that telling the program your picture consists of zero

Gretchen Van Meer, an assistant professor of computer science at Central Michigan University, has been teaching computer graphics at the school for the past three years. She holds a Ph.D. in civil engineering and has been writing programs for the Sanyo for approximately two and a half years. She may be contacted at Central Michigan University, Computer Science Department, Mount Pleasant, MI 48859.

Rainbow Circle



By Gretchen L. Van Meer

points produces an even more interesting result. Try it!

Background

Recently, I assigned a program similar to this one for homework in the Computer Graphics course I teach at Central Michigan University. The object of the assignment was to give the students practice in rotation and translation procedures, but it turned out that some very interesting pictures were generated. That assignment was done on a mainframe with raster graphics Tektronix 4105 terminals using PLOT-10, and was not required to have the capability to run interactively. However, the (almost) universal enjoyment the students had with the project convinced me that a modified version for the Sanyo was worth writing.

Algorithm Description

The procedure for duplicating the pictures consists of standard rotation and translation transforms for two dimensions.¹ The first picture is drawn with the input points. These are connected in the order in which they are given. If requested, the area is filled using the PAINT command. This command is based on the

point on the circumference of the circle referred to above, so it is important that this point be included in an enclosed area of the picture.

Each subsequent picture is obtained by applying a series of standard two-dimensional transforms to the input points.¹ After the transforms are completed, a new set of points is created. These points are then connected and the area optionally filled, just as with the original points. The spacing of each picture depends on the number of copies of the picture selected by the user.

Rotation transforms are accomplished by multiplying each point by the following matrix:

$$\begin{bmatrix} \text{COS } a & \text{SIN } a \\ -\text{SIN } a & \text{COS } a \end{bmatrix}$$

Looking at one point, written as a 1-by-2 matrix $[X \ Y]$ the matrix multiplication gives us:

$$\begin{aligned} X_{\text{NEW}} &= X * \text{COS } a - Y * \text{SIN } a \\ Y_{\text{NEW}} &= X * \text{SIN } a + Y * \text{COS } a \end{aligned}$$

A simple loop operation allows us to apply the same transform to each point in



succession, thereby creating a new set of points. The angle is determined by the total number of pictures desired, and is calculated by dividing the total circumference, 2π radians, by the requested number:

$$\text{ANGLE} = 2 * \pi / \text{number of pictures}$$

which is done in Line 990.

There is one small limitation to the procedure, which is that as given, it rotates the points around the origin. For my students this was convenient because of the windowing capability of PLOT-10, which, unlike the Sanyo, allows both positive and negative values in its world coordinate system.

By creating a window that places the center of the circle at $(0, 0)$, the rotation is quite simple. The world coordinates on the Sanyo, however, are all positive with the origin always in the corner. The rotation can still be done around the center point of the circle, but this requires another operation.

The procedure is to translate the point of rotation to the origin, do the rotation,

and then translate back. The translation operation is simply:

$$\begin{aligned} X_{\text{NEW}} &= X + DX \\ Y_{\text{NEW}} &= Y + DY \end{aligned}$$

where DX and DY are the distance from the point of rotation to the origin. This is the procedure used in the first step in this program. Since the center of the circle is constant, the translation values are also constant, and are assigned in lines 1040 through 1050. The first translation is done in lines 1340 through 1350. The rotation is done in lines 1390 through 1430, and the translation back is done in lines 1450 through 1460.

Rotating points around in a circle is not enough to get the pictures as they appear in this program. In the course of the rotation, the picture also gets "tipped" by the angle of rotation, and I wanted all my pictures to have the same orientation. This is not terribly difficult to correct; it simply means rotating the picture back by the same angle, only this time through the center point of the picture. So you use the exact same procedure as before, except that the angle of rotation is $-\text{ANGLE}$ instead of ANGLE , and the distances DX

and DY are now the distances from a point on the circle (which changes with each new picture).

These translation values are found in lines 1280 through 1290. Then the translation of the center point of the picture to the origin is done in lines 1480 through 1490, the rotation back is done in lines 1510 through 1550, and the translation back is done in lines 1570 through 1580.

For those readers who are familiar with the joys and efficiency of using homogeneous coordinates (3-by-3 matrices for two-dimensional transforms), I chose not to use that method in this program for two reasons.¹ One is that the use of homogeneous coordinates is most convenient when each 3-by-3 matrix multiplication is done in a subroutine, which is not convenient in BASIC; and the other is that it takes the transformation of a very large number of points to justify the additional operations. (Count them!) This program is slow enough using an interpreter. If it were done in C, the procedure might be justified.²

One might ask why, in the case of the five-pointed star, the transform procedures should be used at all. Using this or any other regular polygon it would actually be easier, and probably quicker, to use a more straightforward approach. The simplest method would be to create the polygon (as is done in lines 600 through 660), draw it, move to the next appropriate point on the circumference of the circle, and create a new polygon there by the same method. However, this program was set up to let the user create any abstract line drawing imaginable, such as hearts, flowers, animals or any other irregular figure, and to reproduce them in a regular pattern, all with the same orientation. The choice of a star as a sample was simply because I thought it was interesting and relatively easy to do.

Summary

This program has been remarkably entertaining for both children and adults. Most people who have used it enjoy not only watching the circle of stars appear in spectacular color, but also spend a great deal of time experimenting with a variety of shapes and color combinations. In fact, the enjoyment of watching a creation appear on the screen seems, in many cases, to surpass the pleasure of making a hard copy of one's creation. I have found it a pleasant and impressive way to introduce people to some of the capabilities of my Sanyo's color graphics.

References

1. Foley, James D. and Van Dam, Andreis *Fundamentals of Interactive Computer Graphics*, Chapter 7, pp. 245-267, Addison-Wesley, 1983
2. Unger, John D., "Compilers and the C Language," *SOFT SECTOR*, pp. 52-59, Vol. 1 No. 7, February 1985



The listing: RAINBOW.BAS

```
10 ' A Sanyo graphics program to create a circle of pictures,
20 ' all with the same orientation and evenly spaced;
30 ' with a choice of multiple colors or all the same color.
40 ' Can be used to create Christmas wreaths, pictures frames,
50 ' the stars in the original American flag, or
60 ' interactively demonstrate the graphics capabilities of the
70 ' Sanyo 550/555.
80 '
90 ' Declare and initialize variables
100 ' PI=pi, assigned value; R=radius of circle around which points
110 ' are drawn; XC, YC are center of same circle.
120 PI=3.1415927
130 R=150!
140 XC=300!
150 YC=200!
160 ' T1 - to translate circle center; T2 - to translate figure center
170 DIM T1(2), T2(2)
180 '
190 ' NPTS - number of points in picture, read in interactively
200 ' unless stars are requested.
210 NPTS=5
220 PRINT "Welcome to Rainbow Circle."
230 PRINT
240 PRINT "I will draw you a ring of pictures in the color or colors"
250 PRINT "of your choice. Would you like me to draw you a ring of stars,"
260 PRINT "or would you rather enter the endpoints of your own picture?"
270 PRINT " "
280 PRINT "Enter 1 for your own picture,"
290 PRINT " 2 for stars."
300 ' FLAG1 is the picture selection flag; 1 for user selection,
310 ' anything else => stars.
320 INPUT FLAG1
330 IF FLAG1<>1 THEN GOTO 480
340 PRINT "The center of rotation of the first picture is (450,200)."
350 PRINT " The X values should be in the range 380 - 520 and"
360 PRINT " the Y values should be in the range 150 - 249."
370 PRINT
380 PRINT "The picture will be a closed loop - that is,"
390 PRINT "the last point will be connected to the first point."
400 PRINT ""
410 PRINT "You may have the choice of filling the picture in with color,"
420 PRINT "or leaving it as an outline. If you choose to fill it in,"
430 PRINT "the point (450,200) must be inside the picture."
440 PRINT
450 PRINT "How many points do you want in each picture?"
460 INPUT NPTS
470 ' P(NPTS,2) - array for NPTS points
480 DIM P(NPTS+1,2)
490 IF FLAG1<>1 THEN GOTO 600
500 PRINT
510 PRINT "What are the coordinates of the first point?"
520 PRINT "(This will also be the last point)."
530 INPUT P(1,1),P(1,2)
540 FOR I=2 TO NPTS
```



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```

550 PRINT"
560 PRINT "What is the next point?"
570 INPUT P(I,1),P(I,2)
580 NEXT I
590 GOTO 670
600 ' Get the 5 points for a star
610 THETA=3!*PI/2!
620 FOR I=1 TO 5
630 P(I,1)=(XC+R)+20!*COS(THETA)
640 P(I,2)=YC+20!*SIN(THETA)
650 THETA=THETA+4!*PI/5!
660 NEXT I
670 '
680 ' NPIC - number of pictures to be drawn evenly spaced in a circle
690 '      read in interactively
700 '
710 PRINT
720 PRINT "How many pictures do you want in the circle?"
730 INPUT NPIC
740 PRINT
750 PRINT "What color would you like?"
760 PRINT "      1 - blue"
770 PRINT "      2 - green"
780 PRINT "      3 - light blue"
790 PRINT "      4 - red"
800 PRINT "      5 - purple"
810 PRINT "      6 - yellow"
820 PRINT "      7 - white"
830 PRINT "      8 - rainbow"
840 INPUT KOLOR
850 ' FLAG2 is used to create rainbow colors when KOLOR=8
860 IF KOLOR>7 THEN FLAG2=1 ELSE FLAG2=0
870 PRINT
880 PRINT "Would you like your picture filled in with color, or outlined only?"
890 PRINT "Note: if you are drawing stars, only the center will be filled."
900 PRINT "      If you are drawing your own picture, the area must include"
910 PRINT "      the point (450,200)."
920 PRINT
930 PRINT "      1 - filled"
940 PRINT "      2 - not filled"
950 INPUT FLAG3
960 WINDOW (0,0)-(600,400)
970 VIEW (0,0)-(639,199)
980 ' ANGLE - angle between adjacent pictures
990 ANGLE = 2!*PI/NPIC
1000 '
1010 ' The DX and DY values for the T1 array are constant; the T2
1020 ' array values will have to be recalculated each new picture.
1030 '
1040 T1(1)=-XC
1050 T1(2)=-YC
1060 ' In the following loop:
1070 ' Draw the first picture; calculate T2; do transforms to find
1080 ' points for next picture.
1090 CLS
1100 IF FLAG2=1 THEN KOLOR=1
1110 P(NPTS+1,1)=XC+R
1120 P(NPTS+1,2)=YC

```

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```

1130 FOR III = 1 TO NPIC-1
1140 '
1150 ' Draw picture
1160 LINE (P(NPTS,1),P(NPTS,2))-(P(1,1),P(1,2)),KOLOR
1170 FOR I=2 TO NPTS
1180   LINE -(P(I,1),P(I,2)),KOLOR
1190 NEXT I
1200 IF FLAG3=1 THEN PAINT(P(NPTS+1,1),P(NPTS+1,2)),KOLOR
1210 '
1220 ' Assign values to T2 array, where T2(1) = DX,
1230 ' T2(2) = DY; Need to find point on the circle for ANGLE
1240 ' This is the absolute value of DX, DY for both transforms for
1250 ' reorienting the picture (sign depends on which transform;
1260 ' calculate first transform direction first.)
1270 '
1280 T2(1) = -(XC+R * COS(ANGLE * III))
1290 T2(2) = -(YC+R * SIN(ANGLE * III))
1300 '
1310 FOR J = 1 TO NPTS+1
1320 ' Initial translation - center of circle to origin, so that rotation
1330 ' around center of circle can take place.
1340   P(J,1)=P(J,1)+T1(1)
1350   P(J,2)=P(J,2)+T1(2)
1360 ' Rotations: Use X, Y for new points, put values in P matrix
1370 ' when calculations are complete.
1380 ' First rotation - distance ANGLE around circle
1390   X=P(J,1)*COS(ANGLE)-P(J,2)*SIN(ANGLE)
1400   Y=P(J,1)*SIN(ANGLE)+P(J,2)*COS(ANGLE)
1410 ' Put new values back into P array
1420   P(J,1)=X
1430   P(J,2)=Y
1440 ' Translate back to new location
1450   P(J,1)=P(J,1)-T1(1)
1460   P(J,2)=P(J,2)-T1(2)
1470 ' Translate center of figure to origin
1480   P(J,1)=P(J,1) + T2(1)
1490   P(J,2)=P(J,2) + T2(2)
1500 ' Rotate back -ANGLE around origin
1510   X=P(J,1)*COS(-ANGLE)-P(J,2)*SIN(-ANGLE)
1520   Y=P(J,1)*SIN(-ANGLE)+P(J,2)*COS(-ANGLE)
1530 ' Put values back into P array
1540   P(J,1)=X
1550   P(J,2)=Y
1560 ' Translate back to new location
1570   P(J,1)=P(J,1) - T2(1)
1580   P(J,2)=P(J,2) - T2(2)
1590 NEXT J
1600 IF FLAG2=1 THEN KOLOR=KOLOR+1
1610 IF KOLOR=8 THEN KOLOR=1
1620 NEXT III
1630 ' Draw last picture
1640 LINE (P(NPTS,1),P(NPTS,2))-(P(1,1),P(1,2)),KOLOR
1650 FOR I=2 TO NPTS
1660   LINE -(P(I,1),P(I,2)),KOLOR
1670 NEXT I
1680 IF FLAG3=1 THEN PAINT(P(NPTS+1,1),P(NPTS+1,2)),KOLOR
1690 GOTO 1690
1700 END

```

**Short of AA, here's the best cure in the world
for the 550's disk drive problem that's enough
to drive a man to drink**

Taking the Cure

By Edward B. Beach

I'm sure that almost everyone who owns or uses a Sanyo 550 series computer has wondered why the LED on the disk drive remains on all the time. Not only is this "different" from the way other computers work, it can be downright dangerous in some instances.

For example, I presently have an MBC 550-2 that has only one disk drive. When I use DISKCOPY.COM to back up disks, I have no idea when it is safe to open the drive and swap disks. The LED is on all the time. If one were to remove a disk during a write operation, there would be some real problems. I have had to assume that when the prompts appear on the screen it is safe to swap disks. However, the drive itself is so quiet I can't tell when the motor has stopped, so I'm always a bit hesitant.

In any case, I was of the opinion that the drive LED should indicate disk activity — not which drive was most recently selected. This is what I'm used to when working with other computers. At the

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same time, I found it hard to accept that the problem was with the disk drive itself, as others had assumed (SOFT SECTOR, April '85, Page 88).

Just to satisfy my own curiosity, I removed the Teac 54B drive from the Sanyo and installed it in a different computer — one that handled the drive LED "correctly." Sure enough, the LED was "on" only when the drive was in use. This told me there was nothing wrong with the drive itself; there had to be something in the computer making the drive behave as it did. For this I was quite thankful. Now it should be possible (hopefully) to make a modification to the computer so that any and all disk drives would act the same without having to modify disk drives individually. To borrow a medical phrase, we can now attack the disease itself (the computer hardware) rather than try to fix the symptom (the drive hardware), a much-preferred line of attack.

To pursue this idea, I needed information on the Sanyo circuitry. I managed to get a Parts List from Sanyo for the MBC-550 from our local distributor. Strange as it may seem, the Parts List has not only parts, but schematic diagrams for the computer. It took only a few minutes going over the disk controller circuits to find the solution to the problem.

Here, then, is perhaps the easiest and least painful way to remedy Sanyo's infamous "disk drive LED malady." There is a small amount of "surgery" involved.

However, anyone who has ever used a soldering iron on anything smaller than an iron skillet should have no fear at all of tackling the job.

You'll need a Phillips screwdriver, a short length of hookup wire, a small soldering iron, some solder and a small pair of diagonal cutters (dikes). No extra parts like transistors or ICs will be needed, and you'll need only a few minutes of your time to do the actual work.

Performing the surgery is simplicity itself. You have to remove the computer cabinet, of course. This involves removing five Phillips-head screws, two on each side along the bottom edges and one near the center at the back — a three-minute job if you're very slow. Be sure you've disconnected the computer from the wall outlet before you start. If you do not have a video board installed, you won't even need to unplug the keyboard or video display unless you want to.

With the five screws removed, slide the cabinet slightly to the rear so that the cabinet tabs clear the plastic front panel, then lift the cabinet up and off the computer chassis. If your computer does not have the Sanyo video board installed, you are through with the disassembly. You won't even need to remove the main logic board.

If you do have the video board installed, you will need to remove the logic board from the chassis. Unplug the keyboard plug and video plug from the rear panel. Also unplug the small speaker plug, the main power plug and the disk control

of the logic board. Across the top edge of the board you should see the letters A through I screened. Along the right edge of the board are the numbers 1 through 17. ICs and other parts line up (for the most part) with the lettered columns and numbered rows.

If you're working on your board while it's in the computer, you won't see any of the numbers and you won't see all the letters. They are hiding under the disk

On the FS-555C logic board, Pin 13 is the grounded pin and Pin 12 is the one to jumper to Pin 2 of U73. This may change with different versions of the board, so be sure to check the connections with an ohmmeter. You may find on some boards that both pins 12 and 13 are connected to the component side. You'll then have to perform the topside surgery described above unless you want to completely remove U74. I wouldn't recommend this.

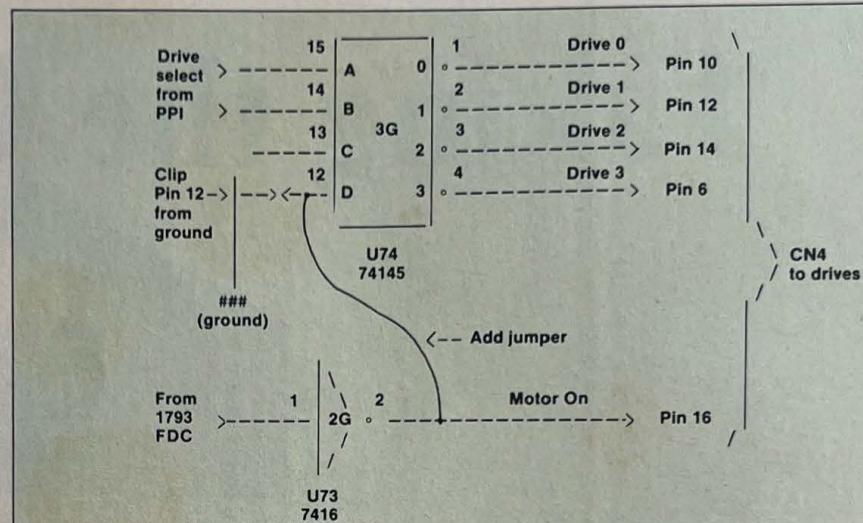


Figure 2: Schematic of modified drive-select circuitry

drive mounting plate. You'll still be able to find the two chips, however.

U73 is located at coordinates 2G. It is a 7416-type device. U74 is right next to U73 at location 3G. It is a 74145-type device. Both of these ICs are quite close to the 34-pin connector near the edge of the board that goes to the disk drives.

Figure 1 shows the two ICs, and what you need to do. First, identify Pin 12 of U74. Take your small diagonal cutters and clip this pin. Be sure to leave enough of the pin showing at the IC body to tack-solder a wire to. You might also bend the stub of the pin down out of the way so that you don't reconnect it when you solder the jumper wire to Pin 12. Solder a short jumper wire to Pin 12 of U74 and to Pin 2 of U73, and you're finished!

Reassemble the computer and you're in business. If you ever decide you want to return the computer to its original state, you can remove the jumper wire and reconnect Pin 12 to the stub or to Pin 13, directly. However, I don't know why anyone would ever want to do this.

For those of you who are used to working on high-density circuit board traces, there is another way of making the wiring change. There is a trace connecting pins 12 and 13 of U74 on the solder side of the board. Cutting this trace will separate the two pins. Use an ohmmeter to see which pin is actually connected to ground, then tack the jumper wire to the ungrounded pin.

Figure 2 shows the actual circuitry involved. U74 is an open collector BCD-to-decimal converter that provides negative logic drive-select outputs. This means the selected output will go low (ground). All other outputs will be at +5 volts since there are pull-up resistors (not shown) on the lines.

Two lines from a PPI are applied to the A and B inputs, while the C and D inputs (pins 12 and 13) are tied to ground. Since the PPI outputs are latched, they are present at all times and change only when you select a different drive. This means that one of the outputs of U74 will be low at all times depending on the drive selected. It is the drive-select outputs of U74 that turn on the activity LEDs on the disk drives.

U73 is an open collector Hex inverter, of which pins 1 and 2 are the input and output, respectively, for the inverter that provides the MOTOR ON signal for the disk drives. This means that Pin 2 of U73 will go low (ground) only when disk activity is requested via the MOTOR ON signal. What we have done is use this signal as an "enable" for the drive select driver, U74, by connecting it to Pin 12.

With no motor signal, Pin 2 of U73 (and Pin 12 of U74) will be high (logic 1). Regardless of what the signals are at the A and B inputs of U74, Pin 12 being high selects an output greater than 3, so all four of the outputs of U74 will be high and no drive will be selected.

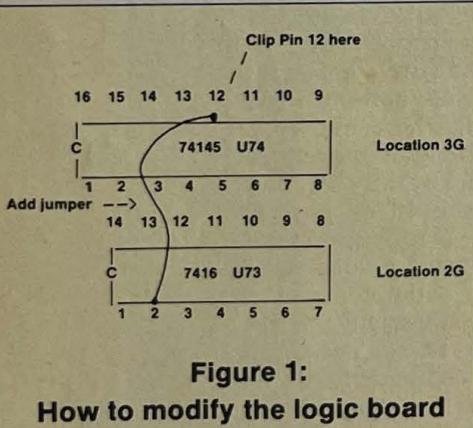


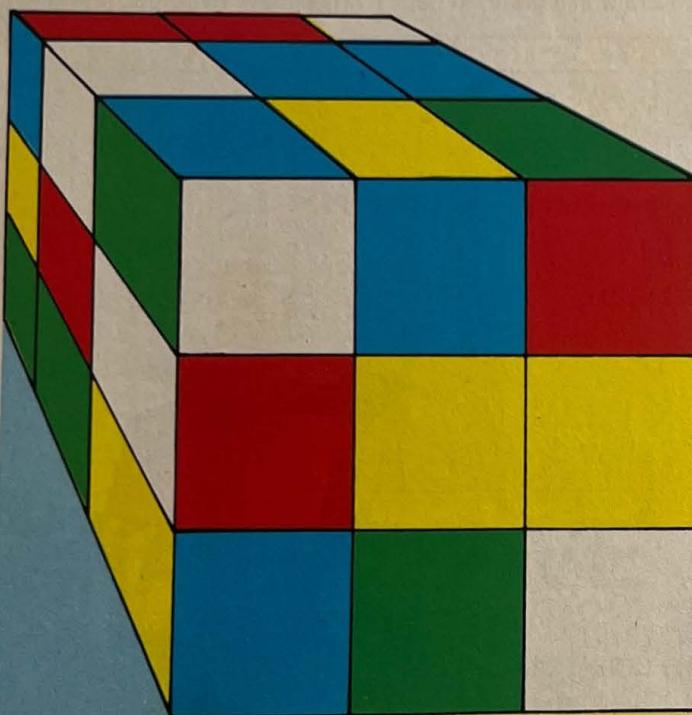
Figure 1:
How to modify the logic board

connector from the logic board. Hold these cables out of the way, remove the two screws that hold the rear panel to the chassis and slide the board out of the chassis. You also have to remove the video board because the ICs you need to get to are underneath it. This requires removing the two screws that hold the connector to the rear panel, and unplugging the video board from the 62-pin connector.

In either case, you need to locate and identify U73 and U74. The easiest way to do this is to use the location coordinates Sanyo provided for you along the edges

Cubist Painting and Cube Solving

By Jonathan Black

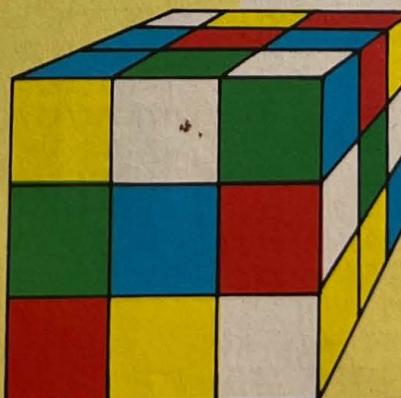


Just when it appeared that the Rubik's Cube craze was subsiding, Sanyo BASIC came along with enough graphics features to allow the enigmatic cube to be "painted" on the computer screen using six different colors or on a monochrome monitor in six contrasting intensities.

It is, of course, impossible to depict a three-dimensional object on the screen in such a way that all sides can be viewed simultaneously, but if Pablo Picasso could overcome this limitation on canvas, an attempt can certainly be made to do so with the help of fleeting pixels.

There are even advantages that a computer version has over the manufactured cube. For example, each of the nine planes into which the cube is divided can be moved independently on the computer, whereas the manufactured cube allows only six to be moved independently. Moreover, the computer can count moves, and data files can be used to record the cube's state at the end of any session.

The program CUBE.BAS takes full advantage of all these features made possible by the computer. Once the program is typed in and saved, it should be run for the first time from Line 2000 (RUN



Jonathan Black, while completing his doctorate in medieval studies, enjoys programming in BASIC and PASCAL for diverse applications. He may be contacted at 663 Huron St., B-1, Toronto, Ontario, Canada, M5R 2R8; (416) 961-2548.

2000 ENTER). This automatically creates the file CUBE.DAT on the drive of the user's choice, and displays the three visible sides of a cube. The cube then appears to break apart, revealing (in the right half of the screen) the remaining three sides viewed as if from *within* the cube, not as if from the opposite side.

In this starting position, the nine blocks on any one side will be of the same color. The six sides are colored dark blue, green, light blue, red, yellow and white, with magenta used for the borders of the blocks and sides. On monochrome monitors with the normal DIP switch settings, these colors appear as low, medium, high, off, blinking medium-off, and blinking high-low, with low used also for the borders.

Now the user is prompted to move any of the nine planes by some degree; the selected move is carried out and the next move is prompted.

After a number of these moves, when the colored blocks of the cube are thoroughly scrambled, the user should end play by selecting zero. At this point, the user has the opportunity to save the current positions and CUBE.DAT will be updated.

The next time CUBE.BAS is run (now from the beginning of the program), the file CUBE.DAT is automatically read so that the cube is set up as it was left in the last session. Moves are carried out as before, though the object is now to return the cube to its unscrambled state. When

the session is ended, the number of moves for the session is displayed with the number of sides that have been assembled, and the user is asked whether CUBE.DAT should be updated with the current positions or should retain those of the previous session.

If there is any need to see the cube quickly restored to its pristine form, simply run the program from Line 2000 again. This overwrites the existing CUBE.DAT, replacing it with the data for the fully assembled cube.

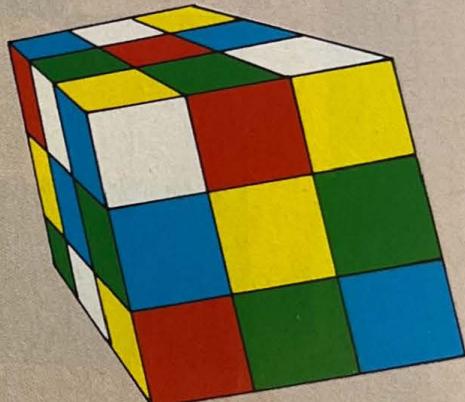
A further advantage of using a data file is that it allows two or more users to have alternate sessions with each user keeping a data file on his own disk to prevent the other users from undoing his progress.

The listing: CUBE.BAS

```

5' CUBE by Jonathan Black (Toronto, 1985)
10 GOSUB 2160
20 PRINT "Drive containing CUBE.DAT (if none then BREAK and RUN 2000)? ";
30 FILE$=""
40 FILE$=INKEY$: IF FILE$="" THEN 40
50 IF ASC(FILE$)>96 THEN FILE$=CHR$(ASC(FILE$)-32)
60 FILE$=FILE$+":CUBE.DAT"
70 DIM B(53)
75 REM Set up cube
80 OPEN "I",#1,FILE$
90 FOR I=0 TO 53
100 INPUT#1,B(I)
110 NEXT I
120 INPUT#1,SS
130 CLOSE #1:CLS:LOCATE 1,1,0
140 M=0:CLR=5:COLOR CLR
150 LINE(214,24)-(100,24):LINE-(182,0):LINE-(272,0)
160 LINE-(272,45):LINE-(214,82):LINE-(100,82):LINE-(100,24)
170 LINE(214,82)-(214,24):LINE-(272,0)
180 LINE(174,82)-(174,24):LINE-(240,0)
190 LINE(136,82)-(136,24):LINE-(210,0)
200 LINE(100,63)-(214,63):LINE-(272,32)
210 LINE(100,44)-(214,44):LINE-(272,17)
220 LINE(132,14)-(235,14):LINE-(235,68)
230 LINE(160,6)-(254,6):LINE-(254,56)
240 PAINT(250,3),B(0),5:PAINT(215,3),B(1),5:PAINT(185,3),B(2),5
250 PAINT(163,10),B(5),5:PAINT(196,10),B(4),5:PAINT(230,10),B(3),5
260 PAINT(210,20),B(6),5:PAINT(170,20),B(7),5:PAINT(134,20),B(8),5
270 PAINT(120,30),B(9),5:PAINT(150,30),B(10),5:PAINT(190,30),B(11),5
280 PAINT(190,50),B(14),5:PAINT(150,50),B(13),5:PAINT(120,50),B(12),5
290 PAINT(120,70),B(15),5:PAINT(150,70),B(16),5:PAINT(190,70),B(17),5
300 PAINT(220,65),B(24),5:PAINT(220,48),B(21),5:PAINT(220,28),B(18),5
310 PAINT(240,18),B(19),5:PAINT(240,38),B(22),5:PAINT(240,54),B(25),5
320 PAINT(260,44),B(26),5:PAINT(260,30),B(23),5:PAINT(260,10),B(20),5
330 X(0)=103:X(1)=185:X(2)=217:X(3)=275:X2(1)=273:X3(1)=108
340 Y(0)=2:Y(1)=26:Y(2)=47:Y(3)=85
350 IF X(1)<273 THEN X1(1)=273 ELSE X1(1)=X(1)
360 IF X(1)<250 THEN X2(1)=X2(1)-3 ELSE X2(1)=X(1)
370 IF Y(1)<57 THEN Y1(1)=83 ELSE Y1(1)=Y(1)
380 IF X(1)<260 THEN Y1(2)=83:X3(1)=X3(1)+13:GOTO 400
390 Y1(2)=Y(2):X3(1)=X(1)
400 LINE(X1(1),Y(0))-(X(3),Y(0)):LINE-(X(3),Y(2)):LINE-(X2(1),Y(2))
410 LINE(X(3),Y(2))-(X(2),Y(3)):LINE-(X(0),Y(3))
420 LINE-(X(0),Y1(1)):LINE(X(0),Y(3))-(X3(1),Y1(2))
430 IF X(1)>272 THEN LINE(X(1),Y(2))-(X(1),Y(0))

```



```

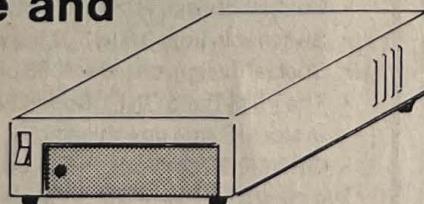
440 IF X(0)>255 THEN LINE(X(1),Y(0))-(X(0),Y(1))
450 IF CLR=5 THEN CLR=0:COLOR CLR:GOTO 400
460 CLR=5:COLOR CLR
470 FOR I=0 TO 3:X(I)=X(I)+1:Y(I)=Y(I)+2:NEXT I
480 IF Y(0)<45 THEN 350
490 LINE(410,90)-(500,90):LINE-(442,127):LINE-(328,127)
500 LINE-(328,69):LINE-(410,45):LINE-(500,45):LINE-(500,90)
510 LINE(410,45)-(410,90):LINE-(328,127)
520 LINE(438,45)-(438,90):LINE-(364,127)
530 LINE(468,45)-(468,90):LINE-(482,127)
540 LINE(328,89)-(410,62):LINE-(500,62)
550 LINE(328,108)-(410,77):LINE-(500,77)
560 LINE(388,51)-(388,101):LINE-(482,101)
570 LINE(360,59)-(360,113):LINE-(463,113)
580 PAINT(435,120),B(51),5:PAINT(400,120),B(52),5:PAINT(362,120),B(53),5
590 PAINT(389,110),B(50),5:PAINT(420,110),B(49),5:PAINT(450,110),B(48),5
600 PAINT(475,95),B(45),5:PAINT(440,95),B(46),5:PAINT(412,95),B(47),5
610 PAINT(425,85),B(33),5:PAINT(450,85),B(34),5:PAINT(480,85),B(35),5
620 PAINT(480,70),B(32),5:PAINT(450,70),B(31),5:PAINT(425,70),B(30),5
630 PAINT(425,50),B(27),5:PAINT(450,50),B(28),5:PAINT(480,50),B(29),5
640 PAINT(400,55),B(38),5:PAINT(400,72),B(41),5:PAINT(400,88),B(44),5
650 PAINT(370,99),B(43),5:PAINT(370,82),B(40),5:PAINT(370,62),B(37),5
660 PAINT(340,73),B(36),5:PAINT(340,92),B(39),5:PAINT(340,110),B(42),5
670 COLOR 2
680 LOCATE 1,16:PRINT "1";CHR$(26);
690 LOCATE 2,13:PRINT "2";CHR$(26);
700 LOCATE 3,10:PRINT "3";CHR$(26);
710 LOCATE 5,9:PRINT "4";CHR$(26);
720 LOCATE 7,9:PRINT "5";CHR$(26);
730 LOCATE 9,9:PRINT "6";CHR$(26);
740 LOCATE 12,15:PRINT CHR$(24) TAB(19) CHR$(24) TAB(23) CHR$(24);

```

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```

750 LOCATE 13,15:PRINT "7" TAB(19) "8" TAB(23) "9";
760 LOCATE 21,1,1
770 INPUT "Position to rotate (1-9, or 0 to stop <CR>)";P
780 IF P>9 THEN 760
785 REM Count moves
790 IF P=0 THEN 1790 ELSE M=M+1
800 INPUT "Quarter turn, half turn, or reverse quarter turn (1,2, or 3 <CR>)";Q
810 IF Q>3 OR Q<1 THEN LOCATE 22,1:GOTO 800
820 R=0
825 REM Branch to one of the nine planes and return here after each
830 REM quarter turn until the move is completed
840 IF R=Q THEN 760 ELSE R=R+1
850 ON P GOTO 860,970,1050,1160,1270,1350,1460,1570,1650
860 TMP(0)=B(0):TMP(1)=B(1):TMP(2)=B(2):B(0)=B(38):B(1)=B(41):B(2)=B(44)
870 B(38)=B(47):B(41)=B(46):B(44)=B(45):B(47)=B(26):B(46)=B(23):B(45)=B(20)
880 B(26)=TMP(0):B(23)=TMP(1):B(20)=TMP(2):I=27:GOSUB 1760
890 IF Q=3 AND R<3 THEN 840
900 PAINT(185,3),B(2),5:PAINT(215,3),B(1),5:PAINT(250,3),B(0),5
910 PAINT(260,10),B(20),5:PAINT(260,30),B(23),5:PAINT(260,44),B(26),5
920 PAINT(475,95),B(45),5:PAINT(440,95),B(46),5:PAINT(413,95),B(47),5
930 PAINT(400,88),B(44),5:PAINT(400,75),B(41),5:PAINT(400,55),B(38),5
940 PAINT(425,50),B(27),5:PAINT(450,50),B(28),5:PAINT(480,50),B(29),5
950 PAINT(480,70),B(32),5:PAINT(480,85),B(35),5:PAINT(450,85),B(34),5
960 PAINT(425,85),B(33),5:PAINT(425,70),B(30),5:GOTO 840
970 TMP(0)=B(3):TMP(1)=B(4):TMP(2)=B(5):B(3)=B(37):B(4)=B(40):B(5)=B(43)
980 B(37)=B(50):B(40)=B(49):B(43)=B(48):B(50)=B(25):B(49)=B(22):B(48)=B(19)
990 B(25)=TMP(0):B(22)=TMP(1):B(19)=TMP(2)
1000 IF Q=3 AND R<3 THEN 840
1010 PAINT(163,10),B(5),5:PAINT(196,10),B(4),5:PAINT(230,10),B(3),5
1020 PAINT(245,19),B(19),5:PAINT(245,38),B(22),5:PAINT(245,54),B(25),5
1030 PAINT(455,107),B(48),5:PAINT(422,107),B(49),5:PAINT(389,107),B(50),5

```

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1040 PAINT(375,99),B(43),5:PAINT(375,82),B(40),5:PAINT(375,64),B(37),5:GOTO 840
1050 TMP(0)=B(6):TMP(1)=B(7):TMP(2)=B(8):B(6)=B(36):B(7)=B(39):B(8)=B(42)
1060 B(36)=B(53):B(39)=B(52):B(42)=B(51):B(53)=B(24):B(52)=B(21):B(51)=B(18)
1070 B(24)=TMP(0):B(21)=TMP(1):B(18)=TMP(2):I=9:GOSUB 1760
1080 IF Q=3 AND R<3 THEN 840
1090 PAINT(134,20),B(8),5:PAINT(170,20),B(7),5:PAINT(210,20),B(6),5
1100 PAINT(220,28),B(18),5:PAINT(220,48),B(21),5:PAINT(220,65),B(24),5
1110 PAINT(435,120),B(51),5:PAINT(396,120),B(52),5:PAINT(362,120),B(53),5
1120 PAINT(340,110),B(42),5:PAINT(340,92),B(39),5:PAINT(340,72),B(36),5
1130 PAINT(120,32),B(9),5:PAINT(150,32),B(10),5:PAINT(190,32),B(11),5
1140 PAINT(190,52),B(14),5:PAINT(190,72),B(17),5:PAINT(150,72),B(16),5
1150 PAINT(120,72),B(15),5:PAINT(120,52),B(12),5:GOTO 840
1160 TMP(0)=B(11):TMP(1)=B(10):TMP(2)=B(9):B(11)=B(36):B(10)=B(37):B(9)=B(38)
1170 B(36)=B(27):B(37)=B(28):B(38)=B(29):B(27)=B(20):B(28)=B(19):B(29)=B(18)
1180 B(20)=TMP(0):B(19)=TMP(1):B(18)=TMP(2):I=0:GOSUB 1760
1190 IF Q=3 AND R<3 THEN 840
1200 PAINT(120,32),B(9),5:PAINT(150,32),B(10),5:PAINT(200,32),B(11),5
1210 PAINT(225,28),B(18),5:PAINT(245,20),B(19),5:PAINT(260,12),B(20),5
1220 PAINT(480,55),B(29),5:PAINT(450,55),B(28),5:PAINT(425,55),B(27),5
1230 PAINT(400,56),B(38),5:PAINT(370,64),B(37),5:PAINT(340,74),B(36),5
1240 PAINT(134,20),B(8),5:PAINT(170,20),B(7),5:PAINT(208,20),B(6),5
1250 PAINT(230,10),B(3),5:PAINT(248,3),B(0),5:PAINT(218,3),B(1),5
1260 PAINT(186,3),B(2),5:PAINT(162,10),B(5),5:GOTO 840
1270 TMP(0)=B(14):TMP(1)=B(13):TMP(2)=B(12):B(14)=B(39):B(13)=B(40)
1280 B(12)=B(41):B(39)=B(30):B(40)=B(31):B(41)=B(32):B(30)=B(23):B(31)=B(22)
1290 B(32)=B(21):B(23)=TMP(0):B(22)=TMP(1):B(21)=TMP(2)
1300 IF Q=3 AND R<3 THEN 840
1310 PAINT(120,55),B(12),5:PAINT(150,55),B(13),5:PAINT(190,55),B(14),5
1320 PAINT(225,48),B(21),5:PAINT(245,38),B(22),5:PAINT(262,28),B(23),5
1330 PAINT(480,70),B(32),5:PAINT(450,70),B(31),5:PAINT(425,70),B(30),5
1340 PAINT(400,75),B(41),5:PAINT(375,82),B(40),5:PAINT(345,92),B(39),5:GOTO 840

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1350 TMP(0)=B(17):TMP(1)=B(16):TMP(2)=B(15):B(17)=B(42):B(16)=B(43)
1360 B(15)=B(44):B(42)=B(33):B(43)=B(34):B(44)=B(35):B(33)=B(26):B(34)=B(25)
1370 B(35)=B(24):B(26)=TMP(0):B(25)=TMP(1):B(24)=TMP(2):I=45:GOSUB 1760
1380 IF Q=3 AND R<3 THEN 840
1390 PAINT(120,72),B(15),5:PAINT(150,72),B(16),5:PAINT(190,72),B(17),5
1400 PAINT(225,65),B(24),5:PAINT(245,54),B(25),5:PAINT(262,44),B(26),5
1410 PAINT(480,82),B(35),5:PAINT(450,82),B(34),5:PAINT(425,82),B(33),5
1420 PAINT(400,88),B(44),5:PAINT(375,99),B(43),5:PAINT(340,110),B(42),5
1430 PAINT(362,120),B(53),5:PAINT(398,120),B(52),5:PAINT(435,120),B(51),5
1440 PAINT(455,107),B(48),5:PAINT(475,95),B(45),5:PAINT(443,95),B(46),5
1450 PAINT(412,95),B(47),5:PAINT(389,106),B(50),5:GOTO 840
1460 TMP(0)=B(2):TMP(1)=B(5):TMP(2)=B(8):B(2)=B(9):B(5)=B(12):B(8)=B(15)
1470 B(9)=B(53):B(12)=B(50):B(15)=B(47):B(53)=B(33):B(50)=B(30):B(47)=B(27)
1480 B(33)=TMP(0):B(30)=TMP(1):B(27)=TMP(2):I=36:GOSUB 1760
1490 IF Q=3 AND R<3 THEN 840
1500 PAINT(120,75),B(15),5:PAINT(120,55),B(12),5:PAINT(120,35),B(9),5
1510 PAINT(134,20),B(8),5:PAINT(162,10),B(5),5:PAINT(186,3),B(2),5
1520 PAINT(425,55),B(27),5:PAINT(425,70),B(30),5:PAINT(425,85),B(33),5
1530 PAINT(412,95),B(47),5:PAINT(389,106),B(50),5:PAINT(362,120),B(53),5
1540 PAINT(340,110),B(42),5:PAINT(340,92),B(39),5:PAINT(340,72),B(36),5
1550 PAINT(375,64),B(37),5:PAINT(400,56),B(38),5:PAINT(400,73),B(41),5
1560 PAINT(400,88),B(44),5:PAINT(375,99),B(43),5:GOTO 840
1570 TMP(0)=B(1):TMP(1)=B(4):TMP(2)=B(7):B(1)=B(10):B(4)=B(13):B(7)=B(16)
1580 B(10)=B(52):B(13)=B(49):B(16)=B(46):B(52)=B(34):B(49)=B(31):B(46)=B(28)
1590 B(34)=TMP(0):B(31)=TMP(1):B(28)=TMP(2)
1600 IF Q=3 AND R<3 THEN 840
1610 PAINT(155,75),B(16),5:PAINT(155,55),B(13),5:PAINT(155,35),B(10),5
1620 PAINT(170,20),B(7),5:PAINT(196,10),B(4),5:PAINT(217,3),B(1),5
1630 PAINT(450,55),B(28),5:PAINT(450,70),B(31),5:PAINT(450,85),B(34),5
1640 PAINT(443,95),B(46),5:PAINT(421,106),B(49),5:PAINT(396,120),B(52),5
1645 GOTO 840

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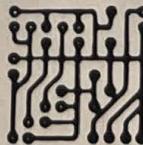
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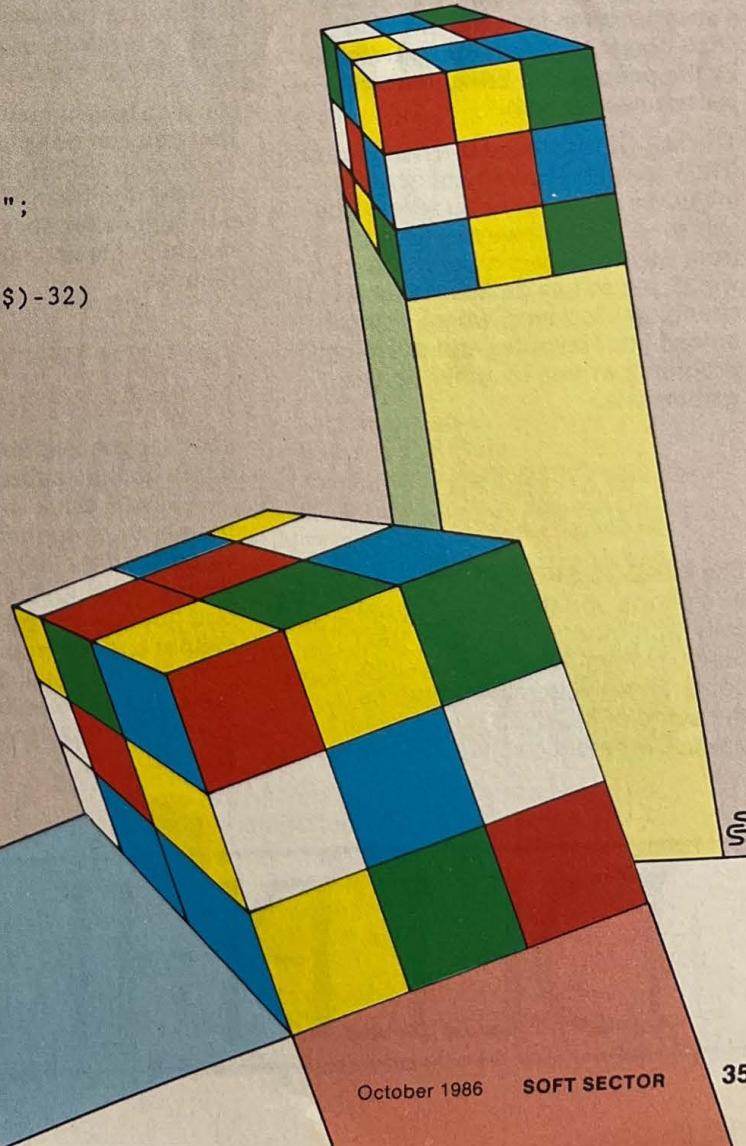
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1650 TMP(Ø)=B(Ø):TMP(1)=B(3):TMP(2)=B(6):B(Ø)=B(11):B(3)=B(14):B(6)=B(17)
1660 B(11)=B(51):B(14)=B(48):B(17)=B(45):B(51)=B(35):B(48)=B(32):B(45)=B(29)
1670 B(35)=TMP(Ø):B(32)=TMP(1):B(29)=TMP(2):I=18:GOSUB 1760
1680 IF Q=3 AND R<3 THEN 840
1690 PAINT(195,75),B(17),5:PAINT(195,55),B(14),5:PAINT(195,35),B(11),5
1700 PAINT(210,20),B(6),5:PAINT(230,10),B(3),5:PAINT(247,3),B(Ø),5
1710 PAINT(480,55),B(29),5:PAINT(480,70),B(32),5:PAINT(480,85),B(35),5
1720 PAINT(475,95),B(45),5:PAINT(455,106),B(48),5:PAINT(435,120),B(51),5
1730 PAINT(225,65),B(24),5:PAINT(225,48),B(21),5:PAINT(225,28),B(18),5
1740 PAINT(245,20),B(19),5:PAINT(265,12),B(20),5:PAINT(265,29),B(23),5
1750 PAINT(265,44),B(26),5:PAINT(245,54),B(25),5:GOTO 840
1760 TMP(Ø)=B(I+1):TMP(1)=B(I):B(I+1)=B(I+3):B(I)=B(I+6):B(I+3)=B(I+7)
1770 B(I+6)=B(I+8):B(I+7)=B(I+5):B(I+8)=B(I+2):B(I+5)=TMP(Ø):B(I+2)=TMP(1)
1780 RETURN
1790 S=Ø:I=Ø
1795 REM Determine the number of assembled sides
1800 IF B(I)ØB(I+1) OR B(I)ØB(I+2) OR B(I)ØB(I+3) OR B(I)ØB(I+4) THEN 1830
1810 IF B(I)ØB(I+5) OR B(I)ØB(I+6) OR B(I)ØB(I+7) OR B(I)ØB(I+8) THEN 1830
1820 S=S+1
1830 IF I<45 THEN I=I+9:GOTO 1800
1840 LOCATE 21,1:PRINT SPC(75):PRINT SPC(75)
1850 LOCATE 21,1:PRINT "Number of moves this session: ";M
1860 PRINT "Number of sides assembled: ";S;" (";SS;"assembled previously)"
1870 PRINT "Save current positions (Y or N)? ";
1880 K$=""
1890 K$=INKEY$:IF K$="" THEN 1890
1900 IF K$="N" OR K$="n" THEN PRINT "(Retaining previous positions)":END
1910 REM Replace the former CUBE.DAT file with an updated list
1920 KILL FILE$
1930 OPEN "O",#1,FILE$
1940 FOR I=Ø TO 53
1950 PRINT#1,B(I);",";
1960 NEXT I
1970 PRINT#1,S
1980 CLOSE #1:END
1990 REM Create CUBE.DAT
2000 GOSUB 2160
2010 PRINT "Drive on which to write CUBE.DAT? ";
2020 FILE$=""
2030 FILE$=INKEY$:IF FILE$="" THEN 2030
2040 IF ASC(FILE$)>96 THEN FILE$=CHR$(ASC(FILE$)-32)
2050 FILE$=FILE$+":CUBE.DAT"
2060 OPEN "O",#1,FILE$
2070 FOR CLR=1 TO 4:GOSUB 2120
2080 NEXT CLR
2090 FOR CLR=6 TO 7:GOSUB 2120
2100 NEXT CLR
2110 PRINT#1,6:CLOSE #1:GOTO 70
2120 FOR BLK=Ø TO 8
2130 PRINT#1,CLR; ",";
2140 NEXT BLK
2150 RETURN
2160 CLS:LOCATE 5,38
2170 PRINT "CUBE"
2180 PRINT:PRINT TAB(33) "Jonathan Black"
2190 PRINT:PRINT
2200 RETURN

```





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First, set your terminal program to operate at either 300 or 1200 Baud (depending on the modem you have), and also select either 7 bits with even parity or 8 bits with no parity, and one stop bit. (If one combination doesn't work, try another.)

Decide which network you should use. There is no surcharge for Uninet or Tymnet. Canadian residents using Datapac will be charged an additional \$12 (U.S.) per hour.

On Telenet: The Uninet network has now merged with Telenet. To get the Telenet number for your area, call (800) 366-0437. After you call your local access number and make connection, press the ENTER key twice. When the "TERMINAL=" prompt appears, press ENTER again. When the "@" prompt appears, type C DELPHI and press ENTER.

On Tymnet: Call (800) 336-0149 to get the Tymnet number for your area. After you dial your designated number and make connection, simply press 'A' no matter what appears on the screen. When "please log in:" appears, type DELPHI and press ENTER.

From Canada (on Datapac): Call Delphi Customer Service at (617) 491-3393 to get the Datapac number for your area. After you connect, press the period key (.) and ENTER (use two periods if you're using 1200 Baud). Type SET 2:1, 3:126 and press ENTER. Now type p 1 3106, DELPHI; and press ENTER. Delphi's new rates indicate an additional \$12 hourly surcharge for evening use of Datapac, which means a total of \$18 (U.S.) for connect time.

From other countries: Many countries have their own data networks that can connect to either Uninet or Tymnet. Check with the telephone authorities in your country for details on how to sign up for this service. When you have an account set up, you can reach Delphi with a "host code" of 312561703088 through Uninet, or 310600601500 through Tymnet. (You'll have to pay the toll charges for this connection.)

Type in Your User Name

If you're already a subscriber to SOFT SECTOR, at the "USERNAME:" prompt, type SOFTSECTORSU and

press ENTER. At the "PASSWORD:" prompt, type your individual subscription number from the mailing label of your latest issue of SOFT SECTOR. (If there are one or more zeros at the beginning of this number, include them.)

If you don't already have a subscription, at the "USERNAME:" prompt, type SOFTSECTOROR and press ENTER. At the "PASSWORD:" prompt, type SENDSUB and press ENTER. Have your MasterCard, VISA or American Express card ready, because you'll be led through a series of questions that will enable us to put your SOFT SECTOR and Delphi subscriptions into effect. In an effort to hold down non-editorial costs, we do not bill for subscriptions.

If you make a typing error, just press ENTER and start over. Remember that at any point, when you're on Delphi, you can type HELP to get help on how to use the system. To get off the system just type BYE.

If you find that you're unable to log onto Delphi and enter the MS-DOS SIG after following these instructions, call us during afternoon business hours at (502) 228-4492. We'll be glad to offer assistance.

Come Visit Us! Type: GROUP MSDOS

After you sign in, you'll be prompted to set up your own, personal "user name" — Delphi is a friendly service, no numbers to remember — and you'll be asked a number of questions so Delphi can set up your account. You'll also be assigned a temporary password. No time is assessed against your free hour of service while you answer these questions.

Delphi will tell you that your account will be ready after 6 p.m. the same day if you sign up before noon (Eastern time zone.) If not, your account will be ready at 6 p.m. the next day. Once an account is opened, each SOFT SECTOR subscriber will be credited with an hour of free time!

When you log back in, use your chosen user name and your temporary password to access the system. At that point, you will meet Max, who will help you configure things and will change your temporary password into your own personal password. This is the password you will use for subsequent sessions — or until you change it.

After Max bids you goodbye, you'll wind up at the Delphi Main Menu; type in GROUP MSDOS and join us on the MS-DOS SIG!

Software review

BASIC Programmer's Toolkit — A Package to Suit Your Programming Needs

If you've been struggling to get IBM BASIC programs to run with Sanyo BASIC, or if you want "pretty" listings of your BASIC programs, or if you'd like to identify the location of all variables or branches in a BASIC program, you'll love the *BASIC Programmer's Toolkit* from MVP Software. The seven programs in this package also allow you to redefine 20 keys on your keyboard, and to modify programs to take less disk space and run faster.

Although written specifically for the Sanyo MBC-550/555, five of the programs in *Toolkit* also run on the IBM PC and most compatibles (like the newer Sanyo MS-DOS machines).

BASIC Programmer's Toolkit provides programs and information on how to translate BASIC programs to and from Sanyo BASIC without any other software or hardware.

There are lots of public domain programs written for IBM PC BASIC, but since Sanyo BASIC tokenizes files differently from IBM PC BASIC (or the common BASICA or GW-BASIC), these programs are ignored by the Sanyo LOAD command. *BTA Converter*, one of the *Toolkit* programs, automatically reads an IBM PC BASIC file and produces an ASCII file which can be routed to either the screen, disk or printer. This file can then be read by Sanyo BASIC. Using the extensive and detailed notes in Chapter 2 of the excellent *Toolkit* manual, you can convert most programs to run in Sanyo BASIC.

BTA Converter takes about one minute for each 4K of IBM PC BASIC program conversion to ASCII. The listing produced, if you route the translation directly to the printer, is normal. Also, since the file is in ASCII, you can use the MS-DOS TYPE or PRINT command to print it on the screen or printer, and you can modify it with a word processor.

For "pretty print" listings, the *BASIC File Lister* program in *Toolkit* takes your BASIC program, saved in ASCII, and allows you to specify the left and right margin, the number of lines per page, the page length, and the line spacing. You can also specify a title for the top of each numbered page.

As the listing is produced, it is formatted with indents for lines that run beyond the right margin (with word wrap, too!)

and multiple statements are put on separate lines. Other formatting rules are also observed to increase the readability of the listing.

If your program has typical BASIC "spaghetti code," with lots of branching using GOTO and GOSUB, and many variables, you'll appreciate the *BASIC Cross-Reference* program in *Toolkit*. This file creates a printout of all "symbols" (variables and line number references) in a BASIC program that has been saved in ASCII. The printout is formatted to be easily read, and ends with a summary specifying totals for program lines, program bytes, symbols and references.

Although the Sanyo keyboard only has five keys specifically marked as PF (programmable function) keys, there are actually 20 different function key assignments available. Each of the five PF keys alone, or with SHIFT, provide assignments PF 1 through 10.

Although it's not generally known, you can also use the top row of number keys with the control key to provide PF 11 through 20. Type KEY LIST and press ENTER while in BASIC and you'll see the 20 default assignments.

PF-Define, another *Toolkit* file, allows you to quickly and easily redefine the function keys while you are in BASIC. You can then permanently store these assignments in a file that can be called while in Sanyo BASIC to implement them.

Sanyo PF assignments are limited to only eight characters, so they are not appropriate for "macros" (long pre-defined character strings), but can be very convenient for frequently used keywords.

Since I don't compile programs, I didn't try out the *Number Erase* or *Number Replace* programs in *Toolkit*. These are designed to compact the source code to occupy less disk space and provide faster execution after compiling.

Number Erase creates an output file identical to your BASIC program in every way except that the unreferenced line numbers are removed. *Number Replace* restores the program by adding line numbers sequentially to unnumbered lines.

The *SB Prep* program in *Toolkit* is intended to clean up BASIC programs created or changed on a word processor, and to pack the code for smaller size and faster execution. I did not test this program.

The program documentation is short, but complete. After three pages of introductory material, each program is described separately in Chapter 1.

Chapter 2 is a valuable summary of differences between IBM BASICA/GW-BASIC and Sanyo BASIC. This chapter alone is worth the price of *Toolkit* if you have been struggling to convert programs to or from Sanyo BASIC.

Chapter 3 offers patches to correct bugs in the IBM BASIC Compiler BASCOM.COM, BASCOM.LIB and BASRUN.EXE programs. Compiling a BASIC program speeds it up considerably (30 times or more), and, within limits, makes it transportable between MS-DOS machines. I've never compiled a program, so I can't comment.

I've found *Toolkit* extremely useful. In fact, *BTA Converter* and *BASIC File Lister* are so easy to use, I finally got around (after two years!) to making formatted listings of the 15 IBM PC BASIC programs in my "AMBIZ-PAK"™ for Amway Product Distributors. Then I used *BASIC Cross-Reference* to produce a variables list for each program. These printouts are now all in one nice, loose-leaf notebook for immediate reference if a user calls.

If you do a significant amount of programming in Sanyo BASIC, or convert IBM PC BASIC programs to Sanyo BASIC, the *BASIC Programmer's Toolkit* will be very useful.

(MVP Software, 1035 Dallas SE, Grand Rapids, MI 49507; 616-245-8376, \$39.95 plus \$3 S/H)

— Fred Blechman

The Evercom II Modem — A Good Choice at the Right Time

Like it or not, the Age of Telecommunications is here. You can't run and you can't hide. There are services and capabilities available to the public now that are quickly becoming items we can't live without, and whether or not to purchase a modem and join in is no longer a very realistic question. Instead, it's time to get to the matter at hand and decide which one to buy.

The Everex Evercom II EV-920 is a 1200 Baud, internal modem that deserves your attention. It's a new half-size card that will fit any of the slots on Sanyo's IBM PC-compatible machines: the 675, 775, 880 and 990. It is accompanied by a very encompassing manual and meets all the other criteria you should be concerned with when purchasing a modem.

Probably the first question you should ask when purchasing a modem is, "Is it Hayes-compatible?" When a particular way of doing things becomes an industry-wide standard, there is generally a good reason for it. In telecommunications, with two different computers, two terminal programs and two modems between you and a complete waste of your time, you quickly come to appreciate any standardization that gains acceptance. If you resist the temptation to buy a cheaper modem that has its own flaky command set, you will spare yourself hours of frustration down the road.

The Evercom II is fully compatible with the Hayes command structure: the familiar AT commands and the +++ Escape to switch into command mode. It also adds a few of its own.

Entering the I2 command while in the command mode will display the current communication parameters: the Baud rate, word length and parity. The volume of the speaker is controlled with the three-step L command, which Hayes, too, now uses on their Smartmodems. And with the X command, you can select three levels of responses that the modem is to display: a minimum set of responses used by older modems, an extended set like that used by the Smartmodem, and a full response set that includes extra call-monitoring capabilities such as dial-tone detect and call-progress monitoring. When problems arise, you can switch to this full response set and the modem will spell out to you the exact nature of the problem.

Probably the most interesting single feature of the Evercom II is that it can detect when the receiver goes off-hook; that is, if you pick up the handset of your extension telephone plugged into the board, the modem drops its carrier and goes on-hook. This hangs up the modem, but the call is not disconnected. If the modem on the other end of the call is another Evercom, or one of the other modems on the market with similar voice/data switching capabilities, you can then tell the other operator by voice to lift his handset and switch to voice communications. When you finish, hang up the handsets and the modems go back online.

If the other modem does not have this capability, you can still transmit the message to the other operator to hang up his modem and pick up the telephone handset. He must then hang up and go back online by command; on your end, it's all automatic.

Included with the EV-920 is BitCom, a communications program from BIT Software that requires 256K of RAM to operate. Always quick to presume that anything free isn't worth having, I started to give the package short shrift. But it's a remarkably effective terminal program that can offer power to

the expert and, at the same time, simplicity of use to the beginner.

BitCom supports ASCII and Checksum Xmodem transfer methods, a dialing directory, and a powerful (though unusually complicated) script language for automating log-on procedures and operations after you're online. For beginners, it runs from a menu and has extensive online help, including, remarkably, an index. For the more advanced, operations may be executed from the DOS command line, bypassing all the menus.

A very important consideration when buying a modem, of course, is whether the company offers good support. Things do go wrong.

After using the EV-920 heavily for about 10 days, the carrier-detect feature gave up the ghost. As soon as the modem went online, it would detect an extension handset off-hook and shut itself down.

I called the Everex customer support line and received excellent service, spoke with a technician, returned the modem, and received a brand new unit within a working week. That's hard to beat.

If you're ready to join the Age of Telecommunications for the first time, or are ready to upgrade your slow 300 Baud modem for something with a little more pizazz, the Evercom II EV-920 is an excellent choice. It meets the Hayes standards and tries to make a few improvements of its own. The Everex service I encountered was prompt, courteous and efficient. And with the very competitive list price of \$249, you would be hard put to find a better package than this.

(Everex Systems, Inc., 47777 Warm Springs Blvd., Fremont, CA 94539; 415-498-1111, \$249)

— Kevin Nickols

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Software review

Norton Commander — Taking Control of Your Hard Disk

The *Norton Commander* is a hard disk organizer that allows the user to organize, view and list files by name (or extension, time or size), and execute programs either through the keyboard or a mouse. This program runs on the 675, 775, 885 or 990 series Sanyo computers and is not copy protected.

The excellent manual and tutorial supplied with the program allow for ease-of-use and are easily understood. During the tutorial, the user will learn of the many features and abilities of this program.

Typically, the user will start *Norton Commander* from the AUTOEXEC.BAT file. It is recommended that the program be placed at the end of the AUTOEXEC.BAT file. Since this is an application program, commands after the *Norton Commander* will not run until the user quits the program. Since all additional programs can be run by exercising the *Norton Commander* program, a user will rarely need to exit from the program. The 10 main functions of the *Norton Commander* are activated from the 10 function keys.

The first time *Norton Commander* is used, two side-by-side windows appear in the upper half of the screen. Below these panels is a standard DOS command line followed by a function key bar at the bottom of the screen. The left panel is the directory panel showing the files and attendant information. The right panel is the status panel showing the *Norton Commander* version and copyright information. The right panel also contains a section of user-supplied directory information. This section is useful for keeping reminders concerning the contents of that particular directory.

The screen can be configured in several ways, with either panel serving as the status or directory panel. Directory panels can display 12 files with complete information or 36 files with name only.

Activating a panel is equivalent to changing the default drive and current directory. Note that this does not work in the status panel. In the panels, many functions operate by moving the file selection bar over a filename or directory name.

To move through the directory listings, the user can use the cursor keys, the ALT key option (a method used to move long distances through a directory), or a mouse. The mouse option is recommended if you have one. I found this method of moving in and around the program very useful.

Many *Norton Commander* functions, such as Copy, Delete, Rename and Move can operate on multiple files. The ability

to operate on the files is aided greatly by the variety of pop-up windows.

In summary, the *Norton Commander* program is terrific. With the well-written manual and clear explanations, this program should be a valuable addition to anyone's library of programs.

(Peter Norton Computing Incorporated, 2210 Wilshire Blvd. #186, Santa Monica, CA 90403; 213-453-2361, \$75)

— Edward Champion

Software review

Doc's Place — Big Fun at a Small Price

Doc's Place is a member of an endangered species — software written for the Sanyo 555 without a Video RAM Board. Not much is being written for the almost bare 555 these days. And at \$14.95, the price is right.

Doc's Place is a simulation of a gaming table. One can elect to play *Blackjack*, *Draw Poker*, *Acey-Deucy*, or *Canfield Solitaire*. The graphics are good, showing a shady looking character sitting at the table with a tall stack of chips on one side and a drink on the other.

You are invited to choose your game. Once in the game, place your bet. In the case of *Draw Poker* — the only one of the card games I am really familiar with — you are shown a hand and given the option of throwing out any of the cards you wish. The computer then tells you if you've won or lost.

The thing I didn't like, however, is that you never know what beat you. The computer's hand is never shown. I really wanted to see some of those hands. Frankly, I'm not sure the computer was always honest. I had some pretty darn good hands and lost. It's like a scene from an old Western: The gambler says "I got four aces," as he puts his six-shooter on the table. "Anybody want to see them?" Nobody ever does. Well sometimes "the Duke" did. The 555 doesn't have a six-shooter, though, and I wanted to see those cards.

As I said before, the graphics are good. That goes for the drawings of the cards. They are very nicely done. The only problem with the graphics is that they are so slow. This can be attributed to the clock speed of the 555 and the fact that the program is in interpreted BASIC. Still, the overall effect is good.

The author made extensive use of the SYMBOL command to create the graphics. SYMBOL is a good command; I wish it existed in standard Microsoft BASIC.

Doc's Place is a pretty good set of card games with a low enough price to make it interesting.

The version I had for review was for monochrome monitor users, but a color version is also available.

I do think, however, that even though the SYMBOL command is an excellent way to create graphics on the 555, the author might have an expanded market if he were to make the program a bit more generic. With some work, it could run on the 775, 885 series as well as on the ever present "Big Blue."

That's OK though. It's an entertaining game for the 555.

(Dougherty Enterprises, 3314 33rd Way, West Palm Beach, FL 33407; 305-683-3347, \$14.95)

— Jim & Michael Pile

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Executive Writer & Executive Filer — Unbeatable Performance and Value

The three most popular software packages in the microcomputer world are the word processor, the spreadsheet and the database. Of these, the word processor is the most talked about and the most personal. Everyone wants the perfect word processor and everyone has an opinion as to what constitutes the perfect word processor.

Bring up any word processor in a crowd of 50 people and 10 will love it, 20 or so will hate it, and the rest will just smile knowingly.

The packages we are looking at here are *Executive Writer* and *Executive Filer* by Paperback Software. At a list price of \$69.95 each, they are certainly among the less expensive of the market offerings.

Let's consider them one at a time. *Executive Writer* is a full-featured word processor with all the bells and whistles of its more expensive competitors. It features full word wrap, boldface and underlining, search and replace, and much more.

Both packages come in a book. The disk is placed in a little sealed pouch at the back of the book. The pouch is thick and sturdy enough to prevent damage to the disk. As is the case with most software on the market today, if you break the seal on the disk package, it's yours.

The documentation is excellent. It begins with installation instructions and continues with a tutorial which will have a beginner using *Executive Writer* in half an hour.

The editing screen is uncluttered and displays the name of the document, the insert status, the document status (Document or Text mode) and the status of boldface and underline. The tab settings are displayed at the bottom of the screen as little triangles pointing upward at the tab positions.

Everything is pretty much menu driven. I suspect someone accustomed to using word processing could load the program and learn the basics such as writing a letter or memo without the manual. To learn the extras, such as search and replace, block moves, and widows and orphans would probably require use of the manual.

Executive Writer is truly easy to learn. It does lack a few things that I have come to take for granted. First of all, the screen does not show what the printed version of the file will look like. Some don't consider that a disadvantage, though. The same is true of many popular, more expensive word processors.

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One feature that is a definite turn-off is the copy protection. It's similar to that used by *Lotus*, in that it requires the original system disk to be placed in Drive A to run. That may be the best way to handle protection, although some companies have provided means to keep the protection without the necessity of a key disk. Even more large companies have recently dropped copy protection entirely. Microsoft is the leading example. There is no fool-proof copy protection method, and its use just provides an obstacle to the legitimate user.

Executive Filer is a database management system. It, too, is easy to learn and, of course, fits with *Executive Writer* the way *InfoStar* fits with *WordStar*. In my opinion, even though it is a stand alone package, it just wouldn't be the same without *Executive Writer*. The same is true of *WordStar* and *InfoStar*.

In summary, I found *Executive Writer* to be a nice word processor and *Executive Filer* to be a good and very usable database manager.

Executive Writer can also be run in a non-document mode as a good source code editor for those who use a compiler. For Sanyo users, though, I can't see much advantage in buying any word processor/database manager unless someone introduces something far better than the *WordStar* package. If you use a Sanyo, you can't beat the value of the packaged software. If you have a compatible and need a word processor and/or a database manager without investing a fortune, the *Executive Writer/Executive Filer* package is well worth investigating.

(Paperback Software International, 2612 Eighth Street, Berkeley, CA 94710; 415-644-2116, \$69.95 each)

— Jim Pile

One Liner

SEARCH

Here is a one-liner that is actually a useful utility. What it does is find all the occurrences of specified STRINGS in BASIC programs and reports their line numbers. This is very handy when you want to find all the places where a subroutine has been referenced, or if you have a variable that is being corrupted and you want to make sure you have looked at all the places it has been used. Sure, you can do the search manually, but for a big program, the aggravation and the eyestrain can get pretty bad. I use this program all the time and it has saved me lots of time.

To use *Search*, type in the filename and extension at the prompt. *Search* then prompts for the STRING to be searched for. These can be line numbers, variable names or whatever STRING you want. After you enter the STRING, the program will display onscreen the time started, the line numbers of all the occurrences of your STRING and the time finished. The printer will produce a hard copy of the STRING being sought and the line numbers of the occurrences. The BASIC program being searched must have been saved with the ".A" ASCII file option.

```
1 INPUT "*SEARCH* FILENAME"; F$: INPUT "LOO
K FOR"; C$: LPRINT C$: PRINT TIME$: WIDTH 80
:OPEN "I", 1, F$: FOR M=1 TO 30000: LINE INPU
T #1, A$: IF EOF(1) THEN CLOSE: LPRINT: PRINT
:PRINT TIME$: END ELSE IF INSTR(A$, C$)<>0
THEN LPRINT VAL(A$); : PRINT VAL(A$); : NEX
T M ELSE NEXT M
```

Bill G. Walsh
Concord, CA

CLUBS

We are compiling a list of Sanyo Users Groups in order that you can find those closest to you and also that they may exchange newsletters, share ideas for topics of discussion at monthly meetings, etc.

Please let us know if we have omitted any clubs and send us complete up-to-date addresses. Also, please notify us if you wish to add or delete any names on this list. Send your information to:

Clubs
SOFT SECTOR
 The Falsoft Building
 P.O.Box 385
 Prospect, KY 40059

ALABAMA

Sanyo Users Network, Robert Buster, P.O. Box 4053, Birmingham, AL 35206, (205) 838-2506

Mobile Sanyo Users, Carol Walding, P.O. Box 8505, Mobile, AL 36689

Sanyo Users, Carol Walding, 906 Deer Run Dr., Saraland, AL 36571, (205) 679-1048

ARIZONA

Sanyo Users Group of Arizona (SUGAR), Fred DeBari, P.O. Box 8316, Mesa, AZ 85204, (602) 892-8229

Tucson Sanyo Users Group, Julie Ingham, Arizona Micro Exchange, 1927 E. Speedway, Tucson, AZ 85719 (602) 721-9078 or Bob Kalen, (602) 742-0345

CALIFORNIA

Sanyo Users Group of Southern California, Sandy Sigal CFR Group, 4441 Sepulveda Drive, Culver City, CA 90230, (213) 390-8591

Eureka California SUG, Dave Brawdy, 7025 Humbolt Road, Eureka, CA 95501

Sanyo Mis/Dos Users Group (S.M.U.G.), George D. Blair II, 14717 S. Prairie Ave., Lawndale, CA 90260, (213) 973-6888

Cal Lindell, 12155 Edgecliff Pl., Los Altos Hills, CA 94022, (415) 941-2796

Sanyo Users Group Los Angeles, Anastassios D. Retzios, 6706 York Blvd., #31, Los Angeles, CA 90042, (213) 224-7223

Pomona Valley Sanyo Users Group, Don Bowen, 1017 W. Flora Street, Ontario, CA 91762, (714) 983-5269

SLO CLONES Sanyo Users Group, William Leonard, 940 Visalia St., Pismo Beach, CA 93449, (805) 773-1196

Sacramento Sanyo Users Group, Ernie Thornberg, P.O. Box 660216, Sacramento, CA 95866-0216, (916) 361-8870

Sanyo SIG of San Diego, John Will, P.O. Box 90195, San Diego, CA 92109, (619) 268-7773

BASUG (Bay Area Sanyo Users Group), Scott Burry, 5840 Geary Blvd. #100, San Francisco, CA 94121, (415) 928-2051

Sanyo PC Users Group, Allan Senkow, 22578 Honnold Dr., Saugus, CA 91350

Sanyo PC Hackers, Victor R. Frank, 12450 Skyline Blvd., Woodside, CA 94062, (415) 851-7031

COLORADO

D.C.I. Computer Club, Ed Allburn, Buckingham Square Shopping Center, 1377 B South Joliet, Aurora, CO 80012, (303) 337-7108

Sanyo Computer Club of Colorado Springs, Beth Zinn, P.O. Box 15022, Colorado Springs, CO 80935-5022

Denver Area Sanyo Users Group, Don Robertson, 1210 Saulsbury St., Lakewood, CO 80215, (303) 232-6955

CONNECTICUT

New England Sanyo Users Network, Sid Shore, Sharon Valley Road, P.O. Box 603, Sharon, CT 06069

FLORIDA

Sanyos of Saramana (S.O.S.), Bill Harrier, 4411-100th Street West, Bradenton, FL 33507-1619

Micro's Etc. Sanyo Club, Joe Lewis, 233 Shady Hollow, Casselberry, FL 32707

PC Users Group of Florida, Sanyo Special Interest Group (Sanyo/SIG), Peter Cooke, P.O. Box 9266, Ft. Lauderdale, FL 33310-9266

Sanyo Users Group of Central Florida, Richard E. Ziegler, 6014 W. Harwood St., Orlando, FL 32811, (305) 293-3314

Brevard Users Group/MS-DOS SIG, John Oborn, P.O. Box 2111, Satellite Beach, FL 32937

Sanyo Computer Club, Peyton Yon, 5610 4th St. North, St. Petersburg, FL 33703, (813) 526-6304

Bay Area Sanyo Enthusiasts, Inc. (B.A.S.E.), Dave Robbins, P.O. Box 350104, Tampa, FL 33695-0104, (813) 968-1460

GEORGIA

Atlanta Sanyo/555 Users Group, Robert Orr, 600 King Arnold St., Atlanta, GA 30354, (404) 768-1400

Augusta Sanyo Users Group (ASUG), Jack E. Hobbs, 3008 Claudia Dr., Augusta, GA 30906, (404) 793-3406

HAWAII

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Delphi Bureau

By Kevin Nicko
MS-DOS SIG Manager

The MS-DOS SIG's Database has been surging with renewed vitality over the past few weeks as Mike Salisbury, of Lockport, N.Y., has taken over the duties of Database Manager. Mike has been doing a praiseworthy job of getting the database organized and the topics stuffed with new public domain and user-supported programs.

Although some of you may already have met Mike on Delphi as BRANDED, he will now be traveling under the Username MISAL. If you have a problem or need assistance finding something in the database, drop into the Delphi Mail area and send him a message. He will be more than happy to help you find your way around.

Of course, finding a particular file in a small database is a simple matter. You merely type DIR, see the name of a program that strikes your eye, then READ the filename to see a complete description of it. But as more and more files are added to the database, it becomes harder and harder to find a particular file among all the offerings in each topic directory.

This becomes particularly difficult for those of us who use the Sanyo MBC-550/555. As we've all doubtlessly noticed by now, most of the programs written these days for MS-DOS computers are being written for the so-called "true" IBM PC compatibles. And much to the chagrin of all of us in search of software, the 550/555 is not a true compatible. Even with the Video RAM Board, it never will be.

To alleviate this problem of finding the right program in a topic directory brimming with files, the database software allows you to search on certain "keywords," single words describing the program that can later be used to locate the file. These keywords are attached to each file when it is submitted by a member. Then the Database Manager may add other keywords before he makes the file available in the database.

These same keywords can be used to flag whether the file has been tested on a certain computer. Those who use one of the true compatibles can assume that most all the files in the MS-DOS SIG database will run on their machines, but the 550/555 users are not quite so fortunate. And even for them, as the amount of programs written exclusively for the 550/555 increases, this feature will help them sort those out.

Let's say we're interested in a few new games to add to our collection and we're using a 550/555. First, we enter the Home & Games topic of the database (seems a likely place to find games). The directory is long and a lot of files here are not games, so we have to do a little searching.

Type the first few letters of the SEARCH command and you're ready to go.

SEARCH Menu:
START Search
EXPAND Search (OR)
NARROW Search (AND)
SELECT (To Read)
EXIT

Type ST, for START, to begin the search process. The system responds with "Which keyword?"

Now let's see: What are we looking for? What kind of games are there? Adventure games, arcade action games, board games and vocabulary games come readily to mind. We're interested in them all, so we use ADVENTURE as the first keyword and find ourselves back at the Search Menu. Next we type OR (or EXP) to EXPAND the search. For this keyword, we add ARCADE. Type OR again and add ACTION as a keyword; OR again for BOARD and VOCABULARY. Each time we add a keyword, the system displays the number of files where that particular keyword has been located, along with the total number of files with one or more of the keywords.

Now, to find out which of these files have been tested and known to run on the 550/555, we can type AND (or NAR) to NARROW the search, then enter 550/555 as the keyword. This will reduce the number of files to only those that have been previously selected that also contain the keyword 550/555.

We're now finished with entering keywords and ready to take a look at what has turned up. So we type SEL to SELECT those files that have matched our search pattern. From now on until we either clear the search pattern by beginning another SEARCH or we exit the database topic, the READ and DIR commands operate only on the selected files.

550/555 Users Have Got to Stick Together

As I said before, those of us who use the Sanyo 550/555 often have a rough time finding programs to run on our machines. We're stuck in an IBM PC compatible market with a machine that does a few things a little differently, and it is sometimes a problem for us. The major software companies write for the IBM PC, and if they ever did, they no longer care to go to the trouble of rewriting their programs to run on our machine.

One of the ways we can live with this problem is by supplying each other with information and programs. User groups are one important method for doing this; the Delphi MS-DOS SIG is another.

When you write your own programs, or when you find public domain programs that run on the 550/555, be sure to upload them to the SIG and share them with other users. It's a two-way street. Whether you can do your own programming or not, you may find a program there that will keep you from having to write it yourself.

And you can do this at no charge. In the MS-DOS SIG, you can request free access time for the period you will be uploading your files. In fact, we try to be as generous with this time as possible, allowing you enough time to download a few of the other programs for yourself.

To make a request for free uploading time, all you have to do is select Questions & Feedback from the main MS-DOS SIG menu, then select the Free Access Request form. Answer a few questions about your files there and we will get in touch with you about your request.

So it's free and it's easy. Please share. We want to make the MS-DOS SIG the place where 550/555 users can turn for the support they deserve. But like any group, it takes lots of member participation to be effective. Join us and you won't feel alone with your 550/555.

DIGGING INTO DOS

By Bob Jack

Curiosity is a wonderful thing, especially when it comes to computer software. Have you ever wondered how the serial port, the keyboard, or any of the many functions of the computer work?

The easiest way to find out is to use a FREE piece of software that came with your computer. That's right, DEBUG.

In this article we're going to rouse your curiosity and show you how to use DEBUG to look at the Sanyo Interrupt structure and DOS.

What's an Interrupt?

The way a computer knows what you want it to do is through Machine Language (M/L) routines. These M/L routines control the computer and all peripheral equipment attached to it (keyboard, serial card, printer, video, etc.).

Now, a problem arises because the computer can run much faster than any of the peripheral equipment attached to it. So, how does a M/L routine handle a computer's high speed and slow peripherals? Well, there are two ways: the older Polling method, and the newer Interrupts.

With the older Polling method, a M/L routine looks at (tests), in a loop, a peripheral device. This loop is maintained until the device is ready to be serviced.

Bob Jack is a self-employed small-business man who has been programming, using and writing about personal computers for the past 10 years. On Delphi, in the MS-DOS SIG, he is known as BJ85. He may be contacted at 8371 White Rd., Burbank, OH 44214; (216) 948-2059.



This can cause problems. What happens if a M/L polling routine is working with the printer, and you press a key on the keyboard? The key press is lost.

To overcome this, a newer and more advanced way of handling hardware was invented, the Interrupt. What happens here is, the computer can go on its merry way, doing another job. When a peripheral device needs servicing, it interrupts its job and handles the device.

Just like it sounds, an Interrupt is like when someone is talking to you and you interrupt them to say or do something else.

This Interrupt method works so well that *all* hardware is serviced through them. Not only can a peripheral device create an Interrupt, but so can the software.

The Interrupt Structure

When either a peripheral device, or the software creates an Interrupt, how does the computer know which M/L routine it wants? This is handled by having a list of the addresses of the M/L routines. This list of addresses is called the Interrupt Structure.

For example, when you press a key, the keyboard creates an Interrupt. This Interrupt tells the computer to look up the 251

address in its list, and jump to the M/L routine at that address.

These addresses are stored at the beginning of memory. There are four bytes to an address and 256 addresses. This makes the first 1,024 bytes of memory the Interrupt structure.

Double-Reverse Addressing

When you look at the list of addresses, they won't make any sense to you. This is because they are stored in a double-reverse order.

Since the 8088 CPU can address up to one megabyte of memory, INTEL set up what is known as SEGMENT and OFFSET addressing. The OFFSET (two bytes) can address any byte in a 64K memory block pointed to by the SEGMENT (two bytes).

Segment:Offset	Location
0000:0000	Beginning of memory
8000:0000	Middle of memory
F000:FFFF	End of memory

The normal way of writing an address (in DEBUG, etc.) is the SEGMENT first, a colon, followed by the OFFSET. However, an address is stored in memory in the reverse order. In other words the OFFSET first, followed by the SEGMENT.

This is further complicated by reversing each of the two bytes of both of the SEGMENT and OFFSET. This gives the four address bytes the order of: Low OFFSET — High OFFSET — Low SEGMENT — High SEGMENT.

Address	Explanation
1234:5678	Normal — SEGMENT:OFFSET
7856:3412	Address in memory — double-reverse

While this method of address storage might seem complicated at first, after a little practice with a pencil and paper, you'll find it quite easy.

The reason that double-reverse address storage is used, is so that INTEL can maintain upward compatibility with their earlier CPU chips (8080, 8008, etc.).

Let's Go Exploring

Now that you know what polling is, what an Interrupt is, what and where the Interrupt structure is, and what double-reverse address storage is, let's use DEBUG and look at some of the DOS. Caution: Always work with a backup disk. Format and copy the system to it. Also copy DEBUG to it. Boot the backup disk and run

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DEBUG. DEBUG uses a dash (-) for a prompt. So, at the prompt type in:

D 0000:0000 03FF

The 'D' tells DEBUG to dump memory beginning at 0000:0000 SEGMENT:OFFSET, until the OFFSET of 03FF has been reached.

This will display the entire interrupt structure. Try it a second time and use CONTROL-S (^S) at random, to stop and look at the addresses.

If you have a printer, press CONTROL-P (^P) to toggle the printer on. This will give you a hard copy of the Interrupt structure.

How to Find A Machine Language Routine

OK, let's find a M/L routine. As an example, let's look at the serial Interrupt generated by the serial card. Note: For this example we are using the standard Sanyo 2.11 DOS, I/O Version 1.0.

First, dump the addresses of the eight peripheral Interrupts. For more information see the *Sanyo Operator's Guide*, "Technical Reference" section under Interrupt Vectors and I/O Interrupt Controller. This manual came with your computer. Type in:

D 0000:03E0 03FF

This will give you the addresses of the eight peripheral Interrupts. Remember, they are in double-reverse order. The address of the serial Interrupt is at OFFSET 03E8:

In Memory
OF 23 40 00

Real address
0040:230F

Now, let's look at the actual M/L routine. Type in:

U 0040:230F 234C

The 'U' tells DEBUG to unassemble the M/L code beginning at 0040:230F SEGMENT:OFFSET, until the OFFSET of 234C has been reached.

This will display the serial USART Interrupt. As before, try it a second time, using CONTROL-S (^S) at random to stop and look at the code.

Also, as before, if you have a printer, press CONTROL-P (^P) to toggle the printer on. This will give you a hard copy of the M/L routine.

Wasn't that easy? Let's try another. How about the keyboard Interrupt? Address next to the serial USART Interrupt.

In Memory
51 0B 40 00

Real address
0040:0B51

Type in:

U 0040:0B51

Notice that this time there wasn't an ending address. DEBUG will unassemble one page of M/L code and stop. To see more of the code, simply type a 'U'. DEBUG will then unassemble the next page of M/L code. You can go on and on with this until you reach the end of the M/L code.

Digging Deeper

Up to this point, we've only touched the tip of the iceberg. You've seen how to use DEBUG to find and look at the M/L routines in DOS.

So what do you use it for? Well, outside of satisfying curiosity, it can be the basis for many practical projects. Remember the article on how to alter DOS so it would work with more than 256K ("Mega-DOS," January '86)? Those routines were found using this technique.

Also, remember the article about how to get the arrow keys to work with *CalcStar* ("Key Busters," March '86)? The keyboard buffer locations were found by using this technique.

If the truth be known, you don't have to be a genius. You just have to dig around a little in DOS.

Need To Know More?

Hopefully, we've tickled your curiosity. If you'd like to know more about the way DOS works or about M/L programming, there are three books which will help you greatly. These are: *Programming the 8086 8088* by James W. Coffron, SYBEX; *Assembly Language Primer for the IBM PC & XT* by Robert Lafore, The Waite Group; and *The Peter Norton Programmer's Guide To The IBM PC* by Peter Norton, Microsoft Press.

Although these books were written for the IBM PC, much of what is contained in them directly applies to the Sanyo and M/L programming in general. Any of these books can be found in most large national book stores (B. Dalton, Walden Books, etc.). Note: Don't let the big boys look down their noses at you. This technique even works with Sanyo compatibles such as IBM.

Table 1: DEBUG Command Table

DEBUG Command				Function	
A	address				Assemble
C	address	address	address		Compare
D	address	address			Dump
E	address	bytes			Enter
F	address	address	byte		Fill
G	address	address			Go
H	value	value			Hex Convert
I	value				Input
L	address	drive	record		Load
M	address	address	address		Move
N	file specs				Name
O	value	byte			Output
Q					Quit
R	name				Register
S	address	address	bytes		Search
T	address	value			Trace
U	address	address			Unassemble
W	address	drive	record		Write

-D 0000:03E0 03FF
 0000:03E0 D8 0A 40 00 1B 0B 40 00-0F 23 40 00 51 0B 40 00 X . @ . . @ . . # @ . Q . @ .
 0000:03F0 1B 0B 40 00 1B 0B 40 00-1B 0B 40 00 1B 0B 40 00 . . @ . . @ . . @ . . @ .

In Memory	Segment:Offset	Function	Use
DB 0A 40 00	0040:0AD8	Timer	
1B 0B 40 00	0040:0B1B	Timer 1	Not used
0F 23 40 00	0040:230F	Serial RS-232	
51 0B 40 00	0040:0B51	Keyboard	
1B 0B 40 00	0040:0B1B	Printer	Not used
1B 0B 40 00	0040:0B1B	Disk Cont.	Not used
1B 0B 40 00	0040:0B1B	8087 Co-Proc.	Not used
1B 0B 40 00	0040:0B1B	User Int.	Not used

Table 3: Serial RS-232 Routine

-U 40:230F 234C

Address	Bytes	Mnemonics	Comments
0040:230F	2E	CS:	
0040:2310	8C168E07	MOV [078E],SS	;Save the Stack Segment & Stack Pointer
0040:2314	2E	CS:	
0040:2315	89269007	MOV [0790],SP	
0040:2319	8CCC	MOV SP,CS	
0040:231B	8ED4	MOV SS,SP	;Reset them to this routine
0040:231D	BC6C08	MOV SP,086C	
0040:2320	50	PUSH AX	
0040:2321	53	PUSH BX	;Save registers AX & BX
0040:2322	E42A	IN AL,2A	
0040:2324	2402	AND AL,02	;Check for input
0040:2326	7415	JZ 233D	
0040:2328	E428	IN AL,28	
0040:232A	B700	MOV BH,00	
0040:232C	2E	CS:	
0040:232D	8A1EB121	MOV BL,[21B1]	
0040:2331	2E	CS:	
0040:2332	8887B321	MOV [BX+21B3],AL	;Save input in buffer
0040:2336	FEC3	INC BL	
0040:2338	2E	CS:	
0040:2339	881EB121	MOV [21B1],BL	
0040:233D	E80D00	CALL 234D	
0040:2340	5B	POP BX	
0040:2341	58	POP AX	
0040:2342	2E	CS:	
0040:2343	8E168E07	MOV SS,[078E]	
0040:2347	2E	CS:	
0040:2348	8B269007	MOV SP,[0790]	
0040:234C	CF	IRET	;End the interrupt

Function	Location	Size
Stack Segment storage	078E	2 bytes
Stack Pointer storage	0790	2 bytes
Stack Pointer this routine	086C	unknown
Pointer — Top of buffer	21B1	1 byte
Pointer — Bottom of buffer	21B2	1 byte
Serial Buffer	21B3	256 bytes
Reset port sub-routine	234D	unknown



Sanyo Color Video Switch

By William Ross Barrett

Tired of changing cables to your video monitor? This article describes a hardware project to switch a color monitor between the Sanyo Video RAM Board and native mode.

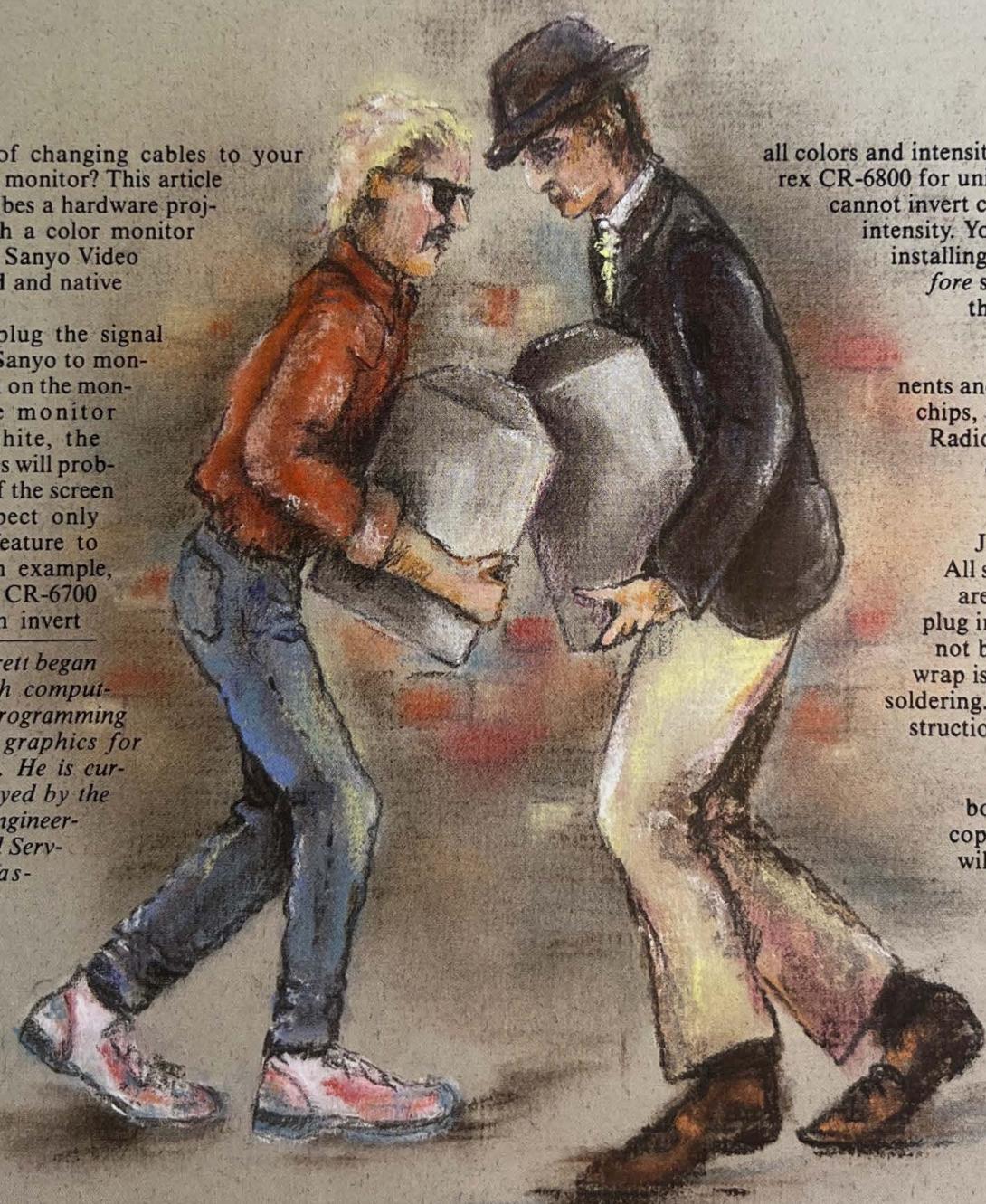
First, unplug the signal cable from Sanyo to monitor and turn on the monitor. If the monitor screen is white, the extra features will probably work. If the screen is dark, expect only the switch feature to work. As an example, my Comrex CR-6700 for IBM can invert

William Barrett began working with computers in 1956, programming engineering graphics for an IBM 650. He is currently employed by the Air Force Engineering Technical Service and is assigned to the F-15 aircraft Flight Simulator.

all colors and intensity. My wife's Comrex CR-6800 for universal application cannot invert color and has fixed intensity. You may check after installing the board but before switch installation, then install only the switches needed.

All components and tools, other than chips, are available from Radio Shack. The chips are available from many mail-order houses such as Jamco or Digi-key. All solder connections are to headers which plug in, so mistakes will not be expensive. Wire wrap is much easier than soldering. Dive right in. Instructions are on the tool package.

Look at the board. One side has copper for solder. We will not need these. If any of the copper pads are connected, this is the wrong board.



Turn the board over. You'll notice that the top is marked B to N, with A and O the end columns. The left edge is marked 1 to 24, with 1 and 25 the top and bottom rows. All wires will be referenced to these. Example: E.10 is a location. Blue J.23 * L.22 means wire wrap a blue wire from J.23 to L.22.

Take a 16-pin socket; it will be U1. Pin 1 is nearest the notch at one end of the socket. Push it through the copper pads so that Pin 1 is at E.1. Wire wrap pins are as follows: E.1 is 1, E.8 is 8, B.8 is 9 and B.1 is 16.

In the same manner, insert a 14-pin socket U3 at E.10, and a 14-pin socket at E.18. On the copper side, you will see three sockets in line one row from the edge. Install the remaining sockets. Now check your work against the illustration. It is not too late to fix.

Remove each socket one at a time. Put a small dab of silicon rubber on the pin side. If you get any on the pins, clean them immediately with white vinegar. Carefully reinstall the socket and check your work before the rubber sets.

Wire wrap the board as listed in the table. Solder resistors and capacitors as shown. On tantalum capacitors, the long lead is positive (+). Jumper J1.2 to J1.1.

If this is to be an outside the chassis device, obtain a metal box and make up cables as needed. Inside the Sanyo, +5v can be jumpered to an unused pin on the round, 8-pin DIN plug.

This project is intended to mount inside the Sanyo 550/555. I made a

bracket from a scrap of aluminum L shaped with a 9-pin Female D connector to match an IBM cable to the monitor.

The connector bolts to a hole cut near the RS-232 board. The board mounts on standoffs. If this is too much work, try double-sided sticky tape.

For my second try, I removed the plug from the video board and used that hole. This makes a neat installation. The switch(s) may be easily mounted on the plastic panel below the disk drives.

Having decided where you want the board and switch(s), wire (solder) J1 to the native Sanyo board, J2 to the Video board, and J5 to the selected output plug. Use the illustrations as needed for your own custom installation.

Mode switch MSW, connected to J3, selects both the board and sync polarity. Connect ground J3.1 to the center pin on the 3-pin SPDT switch. Connect MSW1 J3.3 to either outer pin. MSW2 J3.4 connects to the remaining pin (IBM-type monitor) or to MSW1. If the picture tears, use the other connection.

Ground, MSW center pin, connects to one pin of each option switch. The remaining pins connect to J4 pins 1 through 8. The wires may be 10 feet long or more if you have need. Conditions are XSW1 off XSW2 off normal video; XSW1 on XSW2 off color killer; XSW1 on XSW2 on color background; XSW1 off XSW2 on invert foreground with background. Intensity is similar.

WARNING: The internal installation will void your Sanyo warranty. Also, the

Sanyo unmodified power supply will support this project and the video board, but not the 8087 chip or real-time clock add-on boards. If you need more power, consult the advertisements in SOFT SECTOR.

	B	C	D	E	F	G	H	I	J	K	L	M	N
1.	16.	.	1.	.	16.	.	1.	.	.	.	.	.	.
2.	15.	U.	2.	.	15.	U.	2.	.	8.	J.	1.	.	.
3.	14.	U.	3.	.	14.	U.	3.	.	7.	J.	2.	.	.
4.	13.	1.	4.	.	13.	2.	4.	.	6.	1.	3.	.	.
5.	12.	.	5.	.	12.	.	5.	.	5.	.	4.	.	.
6.	11.	.	6.	.	11.	.	6.	.	.	.	.	.	.
7.	10.	.	7.	.	10.	.	7.	.	8.	J.	1.	.	.
8.	9.	.	8.	.	9.	.	8.	.	7.	J.	2.	.	.
9.	.	.	.	.	.	.	.	.	6.	2.	3.	.	.
10.	14.	.	1.	.	14.	.	1.	.	5.	.	4.	.	.
11.	13.	U.	2.	.	13.	U.	2.	.	.	.	.	.	.
12.	12.	U.	3.	.	12.	U.	3.	.	8.	J.	1.	.	.
13.	11.	3.	4.	.	11.	4.	4.	.	7.	J.	2.	.	.
14.	10.	.	5.	.	10.	.	5.	.	6.	3.	3.	.	.
15.	9.	.	6.	.	9.	.	6.	.	5.	.	4.	.	.
16.	8.	.	7.	.	8.	.	7.	.	.	.	.	.	.
17.	.	.	.	.	.	.	.	.	.	.	.	.	.
18.	14.	.	1.	.	16.	.	1.	.	14.	.	1.	.	.
19.	13.	U.	2.	.	15.	J.	2.	.	13.	J.	2.	.	.
20.	12.	U.	3.	.	14.	3.	3.	.	12.	5.	3.	.	.
21.	11.	5.	4.	.	13.	4.	4.	.	11.	.	4.	.	.
22.	10.	.	5.	.	12.	.	5.	.	10.	.	5.	.	.
23.	9.	.	6.	.	11.	.	6.	.	9.	.	6.	.	.
24.	8.	.	7.	.	10.	.	7.	.	8.	.	7.	.	.
0.	.	.	.	.	9.	.	8.	.	.	.	.	.	.

Figure 1: Board

One Liner

TARGET

This program will place a target on the screen and prompt the player to input its vertical and horizontal locations. A flashing asterisk will then appear on the screen, showing how precise the player's guess has been. (It is not as easy as it may seem!) After a short delay, the target will reappear at a different location and the player will have to guess again.

```
1 CLS:A=INT(RND*600+20):B=INT(RND*155+30)
:CIRCLE(A,B),12:PAINT(A,B):SYMBOL(A-5,B
-3),"T",2,1,3:INPUT"ORIZONTAL LOCATION
(2 TO 619) ";A:INPUT"VERTICAL LOCATION
(15 TO 189) ";B:SYMBOL(A,B),"*",2,1,7:LOC
ATE 1,1,0:FOR K=1 TO 5000:NEXT:LOCATE 1,
1,2:GOTO 1
```

Jorge Ferry
North Miami, FL

One Liner

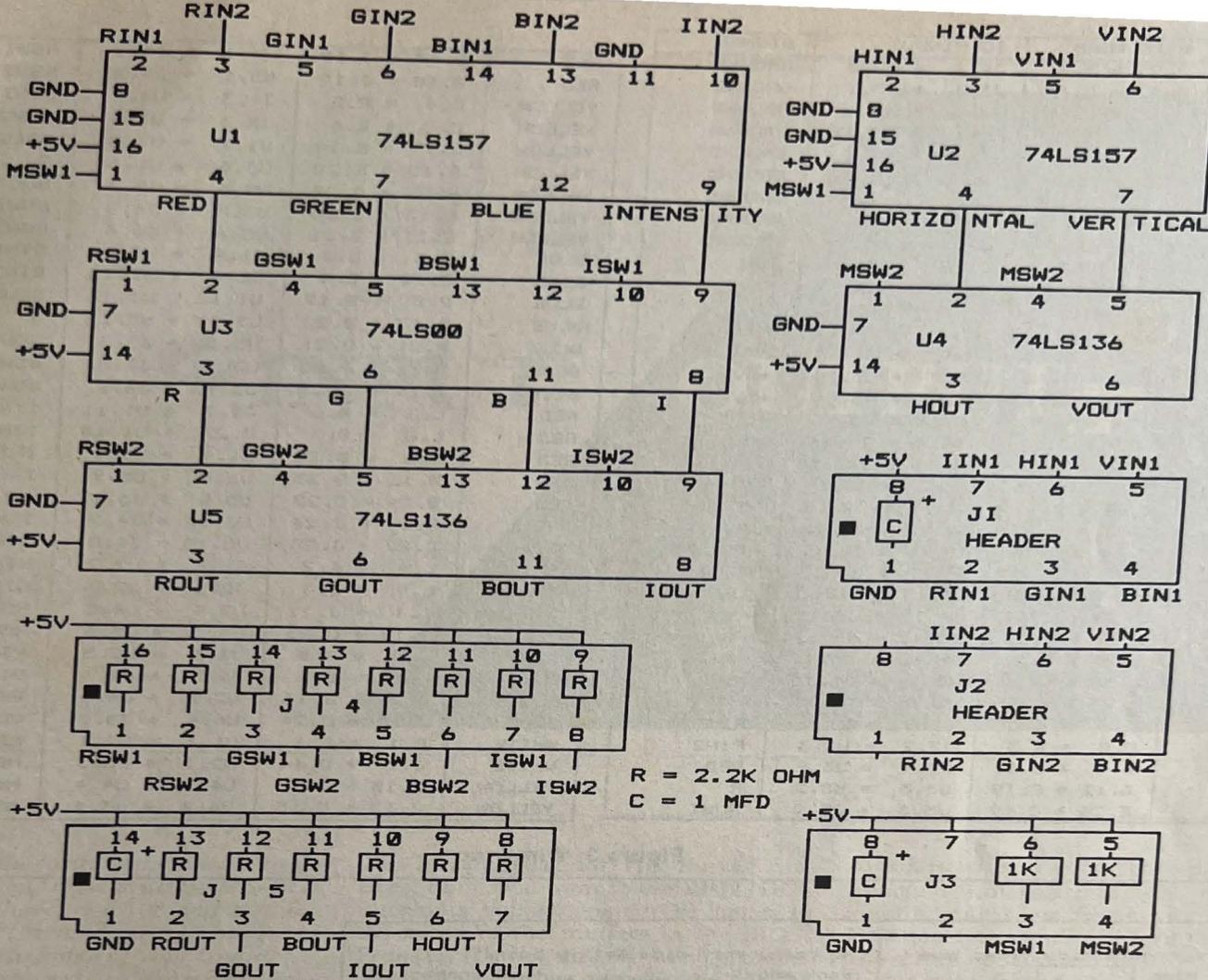
PICTURE

The following program demonstrates a quick algorithm I use to draw pictures. All this program does is draw multiple lines using the basic XY-coordinate system. The line coordinates are held in the data statements. Two zeros in a row means start a new line, four zeros means stop drawing.

To get the line coordinates, I drew a picture on graph paper then transferred the coordinates to the data statements. It's a little time consuming, but it's something to do while on a long plane trip or something.

```
10 CLS:READ X,Y: WHILE X:READ A,B:LINE (X
,Y)-(A,B):READ X,Y: WHILE X:LINE -(X,Y):R
EAD X,Y:WEND:READ X,Y:WEND:LOCATE 25,1:D
ATA 140,180,140,70,380,70,380,180,140,18
0,260,130,260,500,20,500,130,260,130,
,140,70,260,20,,380,70,500,20,,380,18
0,500,130,,,
```

Gary Strawn
Falls Church, VA



All illustrations are of the header NOT the pin side. W. R. Barrett

Figure 2: Diagram



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COLOR	WIRE WRAP	IC PINOUT	SIGNAL				
WHITE	0.2 * J.8	J1.1 * U2.8	GROUND	RED	E.10 * J.18	U3.1 * J4.1	RSW1
WHITE	0.2 * 0.12	J1.1 * J3.1	GROUND	RED	E.18 * J.19	U5.1 * J4.2	RSW2
WHITE	0.2 * 0.18	J1.1 * J5.1	GROUND	YELLOW	0.4 * E.5	J1.3 * U1.5	GIN1
WHITE	J.8 * G.2	U2.8 * U2.15	GROUND	YELLOW	0.9 * E.6	J2.3 * U1.6	GIN2
WHITE	J.8 * E.8	U2.8 * U1.8	GROUND	YELLOW	E.7 * E.14	U1.7 * U3.5	GREEN
WHITE	E.8 * B.2	U1.8 * U1.15	GROUND	YELLOW	E.15 * E.22	U3.6 * U5.5	G
WHITE	0.12 * J.16	J3.1 * U4.7	GROUND	YELLOW	E.23 * 0.20	U5.6 * J5.3	GOUT
WHITE	J.16 * E.16	U4.7 * U3.7	GROUND	YELLOW	E.13 * J.20	U3.4 * J4.3	GSW1
WHITE	E.16 * E.24	U3.7 * U5.7	GROUND	YELLOW	E.21 * J.21	U5.4 * J4.4	GSW2
WHITE	L.2 * G.1	J1.8 * U2.16	+5V	BLUE	0.5 * B.3	J1.4 * U1.14	BIN1
WHITE	L.2 * L.12	J1.8 * J3.8	+5V	BLUE	0.10 * B.4	J2.4 * U1.13	BIN2
WHITE	L.2 * L.18	J1.8 * J5.18	+5V	BLUE	B.5 * B.12	U1.12 * U3.12	BLUE
WHITE	G.1 * A.1	U2.16 * U1.16	+5V	BLUE	B.13 * B.20	U3.11 * U5.12	B
WHITE	L.12 * G.10	J3.8 * U4.14	+5V	BLUE	B.21 * 0.21	U5.11 * J5.3	BOUT
WHITE	L.12 * A.18	J3.8 * U5.14	+5V	BLUE	B.11 * J.22	U3.13 * J4.5	BSW1
WHITE	G.10 * A.10	U4.14 * U3.14	+5V	BLUE	B.19 * J.23	U5.13 * J4.6	BSW2
WHITE	G.18 * L.18	J4.16 * J5.16	+5V	RED	L.3 * B.6	J1.7 * U1.11	IIN1
WHITE	G.19 * G.18	J4.15 * J4.16	+5V	RED	L.8 * B.7	J.27 * U1.10	IIN2
WHITE	G.20 * G.19	J4.14 * J4.15	+5V	RED	B.8 * B.15	U1.9 * U3.9	INTENSITY
WHITE	G.21 * G.20	J4.13 * J4.14	+5V	RED	B.16 * B.23	U3.8 * U5.9	I
WHITE	G.22 * G.21	J4.12 * J4.13	+5V	RED	B.24 * 0.22	U5.8 * J5.12	IOUT
WHITE	G.23 * G.22	J4.11 * J4.12	+5V	RED	B.14 * J.24	U3.10 * J4.7	ISW1
WHITE	G.24 * G.23	J4.10 * J4.11	+5V	RED	B.22 * J.25	U5.10 * J4.8	ISW2
WHITE	G.25 * G.24	J4.9 * J4.12	+5V	YELLOW	L.4 * J.2	J1.6 * U2.2	HIN1
WHITE	L.19 * L.18	J5.13 * J5.14	+5V	YELLOW	L.9 * J.3	J2.6 * U2.3	HIN2
WHITE	L.20 * L.19	J5.12 * J5.13	+5V	YELLOW	J.4 * J.11	U2.4 * U4.2	HORIZONTAL
WHITE	L.21 * L.20	J5.11 * J5.12	+5V	YELLOW	J.12 * 0.23	U4.3 * J5.6	HOOT
WHITE	L.22 * L.21	J5.10 * J5.11	+5V	BLUE	L.5 * J.5	J1.5 * U2.5	VIN1
WHITE	L.23 * L.22	J5.9 * J5.10	+5V	BLUE	L.10 * J.6	J2.5 * U2.6	VIN2
WHITE	L.24 * L.23	J5.8 * J5.9	+5V	BLUE	J.7 * J.14	U2.7 * U4.5	VERTICAL
RED	0.3 * E.2	J1.2 * U1.2	RIN1	BLUE	J.15 * 0.24	U4.6 * J5.7	VOUT
RED	0.8 * E.3	J2.2 * U1.3	RIN2	WHITE	E.1 * J.1	U1.1 * U2.1	MSW1
RED	E.4 * E.11	U1.4 * U3.2	RED	WHITE	J.1 * 0.14	U2.1 * J3.3	MSW1
RED	E.12 * E.19	U3.3 * U5.2	R	YELLOW	J.10 * J.13	U4.1 * U4.4	MSW2
RED	E.20 * 0.19	U5.3 * J5.2	ROUT	YELLOW	J.13 * 0.15	U4.4 * J3.4	MSW2

Figure 3: Wirewrap

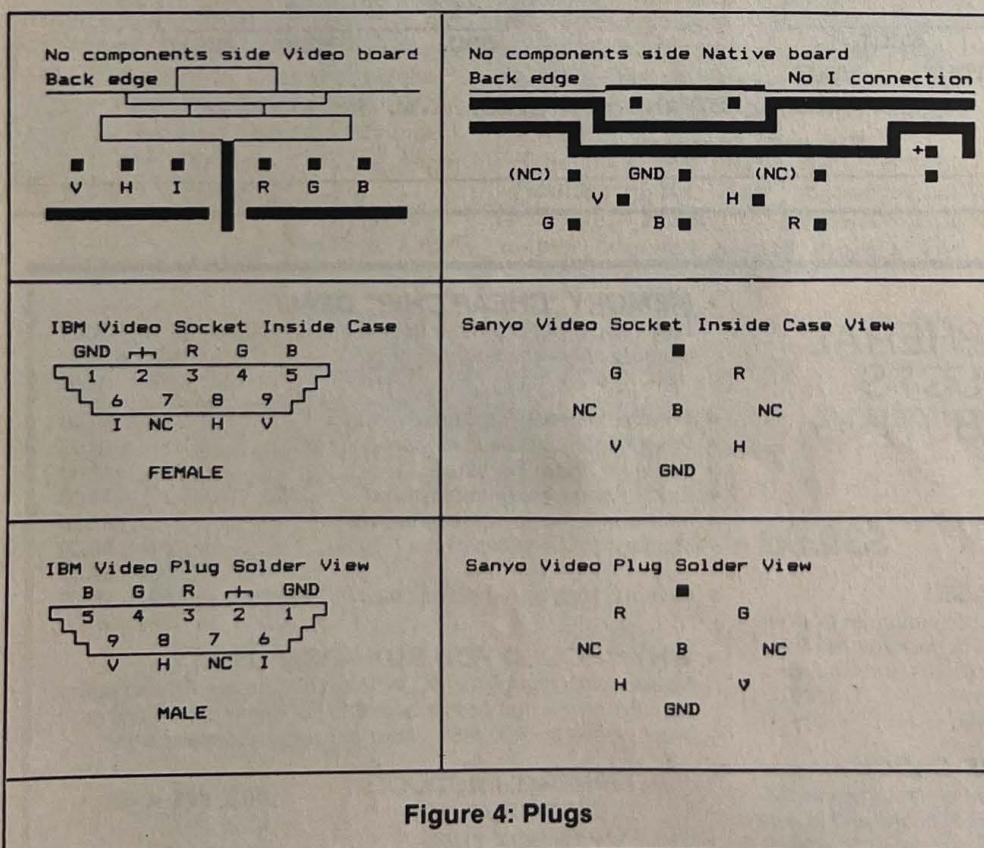


Figure 4: Plugs

No	Description	Radio Shack
1	Board	276-149
3	8 pin sockets	276-1998
4	14 pin sockets	276-1993
3	16 pin sockets	276-1994
4	16 pin dip header	276-1980
2	1/4 w 1k resistor	271-1321
14	1/4 w 2k resistor	271-1325
1	spdt switch	275-625
* 8	spst switch	275-624
2	74LS157	
2	74LS136	
1	74LS00	
1	Wirewrap tool	276-1570
1	Red wire	278-501
1	White wire	278-502
1	Blue wire	278-503
1	Yellow wire	278-504

Figure 5: Parts

INPUT ↵ OUTPUT ↷

By Mark Zeiger

Q. What is the fastest way to write to the screen using only regular BIOS/MS-DOS interrupts? I have tried 10h and 21h, but they just don't seem to get stuff out to the screen as fast as some of your routines.

Also, in Turbo PASCAL, the screen in the editor is not updated automatically unless I go to a new page, or I set the block marker, etc. Can this be changed?

Mordecai Plaut
Jerusalem, Israel

A. I can't speak for Tim Purves' routines, but if you want to use BIOS/DOS interrupts, you are going to be limited to the speed of the routines in the BIOS. Probably Tim is directly writing to the screen if his routines appear to be "lightning fast."

One trick you might try is to take advantage of the "page" feature of the IBM color adapter (the monochrome adapter does not support paging). The

trick is to write to a non-active page using Function 9 of Interrupt 10H. After the inactive pages are filled, you can use Function 5 to switch between the pages. The screen updates will look like they are almost instantaneous.

A routine that will write to any page (active or inactive) is listed at the bottom of this page.

```
; BH = page to write to (0-3 if 80 by 25, 0-7 if 40 by 25)
; BL = attribute of string ( 7 = normal, 70H = reversed,
;                           bit 7 on = blink, bit 3 on = high int)
; DX = pointer to NULL terminated string to be written

write_screen:
    pushf
    cld
    push si
    push cx
    push ax
    mov ah, 9           ;write character/attribute function
    ;for the lodsb instruction that follows
```

```

        mov cx,1           ;write one character at a time
        mov si,dx          ;address of string in SI
        ws_loop: lodsb      ;character in AL and SI increased
        cmp al,0           ;see if at end of string
        je ws_ret
        int 10h            ;do the interrupt
        call adv_cur       ;cursor is not automatically advanced..
        jmp short ws_loop ;..so we must advance it

ws_ret:  pop ax
        pop cx
        pop si
        popf
        ret

adv_cur:           ;advances cursor to next position...
        push ax
        push cx
        push dx
        mov ah,3           ;get cursor position (from page in BH)
        int 10H            ;returns with current row in DH, column in DL
        cmp al,79          ;see if at last column
        je next_line
        inc dl              ;move to next column
        jmp short set_cur

next_line:
        inc dh              ;next row
        xor dl,dl          ;column 0

set_cur:  mov ah,2           ;set cursor function
        int 10h
        pop dx
        pop cx
        pop ax
        ret

```

You will not see the screen update (unless you write to the active page). However, the advance cursor routine will not scroll, so it is up to you to keep track of what and where you're writing.

If you want something faster than this, you'll have to write directly to the screen.

Q. About two and a half years ago, I bought my first computer (a Sanyo MBC-555). It's taken me just about that long to learn how to use it! Do you think I have learned anything from this experience? No! Yesterday I bought an 885 for my wife's secretarial business. She uses Info-

Star extensively, and since I "knew" it would run on the 885 at almost three times the speed, I thought "why not!"

Imagine my surprise when she used FormSort and received the message, "not enough memory." Since I had installed a memory board with 640K (and a 128K spooler), I thought this a little absurd. But, I also remembered a similar letter to "Business Sector" a couple of months back concerning CalcStar doing the same thing. Since we had to run InfoStar I removed 256K of memory from the board (putting me back to 512K and no 128K spooler) and voila! She ran flawlessly.

Isn't there someone out there who might be able to patch InfoStar to run on the 885 with 640K? (And, unless I miss my

guess, the 555 — which I still happily own — will have the same problem with InfoStar and CalcStar if boosted over 512K).

Drew Newman
Salisbury, MO

A. The problem you are having stems from the way the Micropro software tests for enough memory. They are evidently using signed arithmetic instead of unsigned (i.e., JG as opposed to JA transfer instructions). The software finds the number of pages in memory by looking at Byte 3 of the Program Prefix Segment. If you have 640K, there will be an A0 Hex (10 pages of 64K = 640K) in Byte 3. Evidently, the program can only handle

80 Hex (512K) or less, correctly. Having 576K or 640K will probably cause the program to think it has a negative amount of memory.

The included patches simply insert a jump at the beginning of each program (100H) to a routine that checks for anything above 80 Hex in Byte 3. If it finds a number greater than 80H, it puts an 80H in its place; otherwise it leaves the value

as is. The code performs any instructions that had to be taken out because of the initial jump we inserted. It then transfers control to the location just after the patched jump.

FormSort is slightly more complicated because the program executes itself twice. Therefore, after patching Byte 3, we must put back the original instructions that were there before the jump was inserted

by us. This way, the second time the program runs, it won't jump to our patch routine. We do not want to make this jump a second time because the area where we put our patch is the data area for *FormSort*. Thus, our patch has been overwritten after the program executes the first time.

Please see the following patches for details.

FormSort Patch

The following is a patch to run *FormSort* with 640K. Put the following files on the same disk:

DEBUG.COM
FORMSORT.COM

At the A prompt type:

DEBUG FORMSORT.COM ENTER

At the DEBUG prompt (a dash) type the following:

E100 ENTER

The following is displayed:

XXXX:0100 xx XXXX is the hexadecimal segment offset
0100 is the hexadecimal address
xx is the current contents of address

Now type the following. Press the space bar after each entry except the last. Press ENTER after the last entry. (Note: In all these changes the letter 0 is *not* used, the number zero is used).

E9 9D 03 90 ENTER

Now type:

E4A0 ENTER

Type the following sequence of numbers. Press the space bar after each one except the last.

B0 3E 03 00 B0 72 05
C6 06 03 00 B0 BC CA
BE DA C6 06 00 01 EB
C6 06 01 01 02 E9 47 FC ENTER

Now type:

W ENTER (to write the changes to disk)

Now type:

Q ENTER (to quit DEBUG and return to the system prompt)

CalcStar Installation Patch

The following is a patch for the *Install* program for *CalcStar* (INSTCS.COM) on the 775 and 885 with more than 256K RAM. Transfer these two files to the same disk:

INSTCS.COM
DEBUG.COM

Place this disk in the A drive and at the A prompt type:

DEBUG INSTCS.COM ENTER
E100 ENTER

You get the following on the screen:

XXXX:0100 xx

The large X's are a hexadecimal number showing the segment offset. The small x's show the current contents of memory Location 100. The 0100 is the hexadecimal memory Location 100. Enter the following hexadecimal numbers. Press the space bar after each except for the last one where you press ENTER.

E9 7D 06 90 ENTER
E780

You get the following on the screen:

XXXX:0780 xx

Enter the following hexadecimal numbers. Press the space bar after each entry except the last one where you press ENTER.

B0 3E 03 00 B0 72 05 C6 06 03 00 B0 BC C8 8E D0 E9
71 F9 ENTER
W ENTER
Q ENTER

WordStar Installation Patch

The following is a patch for the *Install* program for *WordStar* (INSTALL.COM) on the 775 and 885 with more than 256K RAM.

Transfer these two files to the same disk:

INSTALL.COM
DEBUG.COM

Place this disk in the A drive and at the A prompt type:

DEBUG INSTALL.COM ENTER
E100 ENTER

You get the following on the screen:

XXXX:0100 xx

The large X's are a hexadecimal number showing the segment offset. The small x's show the current contents of memory Location 100. The 0100 is the hexadecimal memory Location 100. Enter the following hexadecimal numbers. Press the space bar after each except for the last one where you press ENTER.

E9 09 03 ENTER
E40C

You get the following on the screen:

XXXX:040C xx

Enter the following hexadecimal numbers. Press the space bar after each entry except the last one where you press ENTER.

80 3E 03 00 80 72 05 C6 06 03 00 80 E9 E8 FC ENTER
W ENTER
Q ENTER

CalcStar Patch

The following is a patch to allow *CalcStar* to work on a system with more than 256K.

Transfer to the same disk these two files:

CS.COM
DEBUG.COM

After this has been done, type the following at the A prompt:

DEBUG CS.COM ENTER
E100

You get the following on the screen:

XXXX:0100 xx

The large X's are a four-digit hexadecimal number showing the segment offset. The small xx shows the current contents of memory Location 100. The 0100 is the hexadecimal memory Location 100. You will enter the following hexadecimal numbers. Press the space bar after each entry except for the last one where you simply press ENTER.

E8 4D 07 90 ENTER

Now type in the following:

E850 ENTER

You get the following on the screen:

XXXX:0850 xx

Now enter the following long series of hexadecimal numbers pressing the space bar after each entry except the last. Press ENTER after the last entry.

A1 03 00 3D 80 00 72 06 B8 80 00 A3 03 00 BC C8 BE
D0 C3

Now type in the letter W and press ENTER. This command writes the altered version of the file CS.COM to disk. When the writing is complete, type in the letter Q and press ENTER. This returns you to the operating system. Now transfer the other *CalcStar* files to this disk and delete DEBUG.COM. This version of *CalcStar* boots up with 640K of RAM installed in the MBC-885. However, *CalcStar* only recognizes a maximum of 512K.

WordStar Key Patch

The following is a *WordStar* patch to eliminate garbage produced by the NUM LOCK key on the 555 or CONTROL/BREAK on the 888, 775 and 675.

Put the following files on the same disk:

WS.COM
DEBUG.COM

At the A prompt type:

DEBUG WS.COM ENTER

At the DEBUG prompt (a dash) type the following:

E724 ENTER

The following is displayed:

XXXX:0724 xx XXXX is the hexadecimal segment offset
 0100 is the hexadecimal address
 xx is the current contents of address

Now type the following,

00 ENTER

This changes the current contents of memory Location 0724H from 10 to 00.

Now type:

W ENTER (to write the changes to disk)

Now type:

Q ENTER (to quit DEBUG and return to the system prompt)



BUSINESS Sector

CHARLOTTE & BRIAN STONE
Soft Sector Contributing Editors

Q. Recently, I have been getting to know my printer better (C. Itoh A10-20 daisy wheel), and can now activate its two graphics print modes. One mode sets the carriage to shift 1/60th of an inch horizontally and 1/48th of an inch vertically. The other mode sets the carriage to 1/120th and 1/48th of an inch. They do indeed type 60 and 120 characters in one inch, as I have discovered. What can I do with these modes? What are the possible applications?

If you know any other A10-20 owners, I'd like to get in touch with them and exchange notes. For example, while I can get the left margin set from DOS command level, I can't seem to get the right margin set to work. Also the line feed and form feed toggle switch on the printer doesn't seem to work.

Bruce A. White
Mt. Rainier, MD

A. The "graphics" mode you refer to for your C. Itoh A10-20 daisy wheel printer is really a Diablo emulation mode. The carriage motion of 120th of an inch horizontal and 48th of an inch vertical is what *WordStar* will use for microjustification, and super- and subscripting. If you reinstall *WordStar* for either the Diablo 630 or 1610 (pick the one that works best), and run the file PRINT.TST that came with *WordStar*, you will probably be very surprised with the excellent results. This should also solve the problem you are having with the right and left margins.

Regarding the LF and FF switches on the printer: Some printers require the printer be online for the switches to function and other printers require the printer be offline. Try both ways to see how yours works.

Q. I have a Riteman-Inforunner dot-matrix printer. Enclosed are copies of what I believe to be the pertinent pages of the owner's manual. Is this printer comparable to anything? I use it primarily with WordStar, EasyWriter and BASIC programming PRINT statements, but recently hit a snag trying to get a spreadsheet printed in compressed type.

From the DOS level, what (and how) do I send to the printer just before I load the spreadsheet to switch it to compressed? Then, what do I send from DOS to get it back to normal (default) condition?

G. D. Greenwood
Houston, TX

A. Sending printer codes from a batch file is an easy process. The following is a list of codes for your Riteman dot matrix printer (which should be similar to an Epson):

^O = CONTROL-O Turns "on"
Compressed Printing
^R = CONTROL-R Turns "off"
Compressed Printing

The addition to your batch (AUTOEXEC.BAT) file would look like this:

^] = LPRINT Must be the first line of printer setup

^O To get the control character ^

^O To get the control character ^
press and hold the CONTROL key then

CS press 'O', (See SOFT SECTOR
April '85)

You could have two files called COMPRON.BAT and COMPROFF.BAT, inserting

the corresponding codes to set or reset compressed characters, then run them as needed.

If the desired code has more than one character after ESCAPE "[" it must be put on the same line. For example, if you were selecting 6/72nds of an inch line spacing, the code would be ^[T6. This process will only work with programs that do not send printer initialization sequences; i.e., *WordStar* and *EasyWriter* will not work unless you blank the printer initialization sequence.

Q. In trying to convert a 3-by-5 card file of customers to storage on a diskette for use with MailMerge, we find it easiest to enter the next month's list of customers at the time we want to invoice them to renew their yearly service contract. We are entering these records into a non-document file under *WordStar* and then prompting MailMerge to begin printing on a specific page number. The page number corresponds to the record number we entered first at the bottom of our existing file. Yesterday, when we entered June's customer list, we started keying into record number 47. The last record entered was 59. Next month we will begin keying into record 60, and so on.

Here's the problem: As the list has grown, we must wait longer for the printer to begin. And in a monitored environment, we try to sit patiently while MailMerge apparently creates every output page in memory without printing. How can we expedite printing by going directly to the new month's records while keeping them an integral part of our growing customer list?

Steve Causey
Riverside, CA

A. I do not know how to speed up the MailMerge process of looking at every record before starting in the middle of a file to begin printing. A possible solution would be to have a file for each month rather than combining all of your records. This way you would be printing all of the records and the printer would start immediately, rather than looking at half of the records before starting to print.

I think that this might be a faster way to update your files and you would also know exactly where to look when doing updates and deletions.

If you still want one complete data file of all customers, you could start a new file each month for the purpose of the renewal invoice, then append the small monthly file to the end of the master file after the invoices have been run.

Reader Reply to Previously Printed Question

John A. Hornung's letter in the May '86 issue of SOFT SECTOR asked about installing more than one RAM disk at a time. The most recent version of Chaucer's MOR RAM Disk allows the creation of

two RAM drives. I have used an older version of MOR together with the public domain RAM drive Membrain with no problems. MOR is invoked from the DOS prompt, and Membrain from the CONFIG.SYS file. I have also installed multiple RAM drives by invoking Vdisk, a second public domain RAM drive, on three different lines of the same CONFIG.SYS file. I don't see why that wouldn't work with other RAM disks.

I don't know what Mr. Hornung means by using a disk as a print buffer. In WordStar, printing a file from a second drive doesn't free up the computer any more than printing it from the drive in use. Using a spooler does though.

Paul Taylor wanted to copy WordStar files automatically from the RAM disk to a floppy upon saving. I have three consecutive function keys defined as ^KS, ^QP and ^KO(copy file), sequentially, for that purpose. The following batch file, SA VIEWS.BAT, should also do the trick:

```
copy WS*.ovr e:  
e:  
:loop  
a:ws  
copy e:%1 b:  
pause ***Press BREAK to Quit***  
goto loop
```

Invoke as follows: SAVEWS <filename>. Invoke as follows: SAVEWS <filename>. The loop allows for the repeated saves necessary when document files are on the RAM disk. Type ^KX to save, and the copying and reloading are automatic. This will only work if the system knows where to reload COMMAND.COM. The following line in the CONFIG.SYS will ordinarily take care of that:

```
shell=a:command.com a: /p
```

*Ben Parkinson
Ogden, UT*

From the Stones

Thank you for the information that will appear in SOFT SECTOR for the benefit of Hornung and Taylor, as well as all of our readers.

Q. I'm curious whether my CalcStar programs can be run on Lotus 1-2-3 Versions 1A or 2. I have an MBC-555-2 with 256K RAM and an earlier Video RAM Board. Please advise.

*Stuart M. Kravitz
Colmar, PA*

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XREF

Since the publication of "XREF" in SOFT SECTOR, October '85, some problems with the program have become evident. The original program had problems under some versions of Sanyo BASIC. The best solution for these problems is to upgrade your Sanyo BASIC to the latest version. I have not yet found a program that will not work with the XREF program under the later versions of BASIC.

Other problems stem from the line cross-reference patch published in the January '86 issue, combined with the fact that many users are running the program under GW-BASIC. Some users are also attempting to use compiled versions of the program.

The problem in running the program under GW-BASIC manifested itself in the VAL function. The program would give an error in Line 1710 when printing and would also give erroneous line numbers while running. It seems that the VAL function in GW-BASIC is not delimited in

the same manner as the VAL function in Sanyo BASIC.

At any rate, the following changes will allow the program to run under GW-BASIC with the line number patch installed. These changes will also allow the program to compile properly with the line number patch installed. The program will also continue to function properly under Sanyo BASIC.

```
190 DIM M(500),D$(255),WORD$(  
300),MH(14),DETECT(125,3)  
510 XLINE=VAL(LEFT$(A$,INSTR  
(A$,"")-1)):' Get line number  
1710 PRINT #3,MH(VAL(LEFT$  
(M(I),2)))  
2010 IF LRC<1 THEN RETURN  
2030 TEST$=STRING$(6-LEN  
(TEST$),255)+TEST$
```

Thanks to Pete Claflin at Florida Computer Resources, Inc. in Jacksonville, Fla. for providing the computer time to locate and eliminate these problems.

*William J. Locke
Ocala, FL*

A. The data files created by *CalcStar* would not be compatible with *Lotus 1-2-3* in any of its releases. If you were to purchase *Lotus*, you would have to create new spreadsheets. The only thing the existing *CalcStar* spreadsheets would be good for would be to verify that the new ones were correct.

Q. I have a Sanyo MBC-555 with two 360K 80-track disk drives, an RGB color monitor and 256K memory, but no Video RAM Board. I bought an Okimate 20 IBM-compatible printer. It works with my Sanyo like the Gemini 10X that I already have, but I did not buy it for that. The software that came with the Okimate 20 controls the color and will load at the A prompt. It also shows the initial display on the monitor, but I cannot proceed beyond that point. Will a Video RAM Board solve the problem? Does the absence of the PrtSc key on the Sanyo preclude the use of this software?

John C. Rowe
Lakewood, CA

A. I am sorry to say that I cannot answer your questions regarding the Okimate 20 color dot-matrix printer with the IBM kit. We are publishing this in the magazine in hopes that one of our readers has solved the problem. Please send us any information, positive or negative, that any of you might have relative to this printer.

Q. I sent an order to BroadReach for *CorrectStar* and the *WordStar* update. They returned my order and said their materials were not compatible with Sanyo.

June Gray
Atlanta, GA

A. I recently talked to BroadReach about telling you that *CorrectStar* will not work on the MBC-550 series computers. I advised them that the patch had been published and they could sell *CorrectStar* to Sanyo 555 users. They did not seem too interested, but if you were to force an order on them I am sure they would sell it to you.

The complete instructions to patch *CorrectStar* can be found in the August '86 issue of SOFT SECTOR, Page 59.

Q. What is the maximum amount of memory that *WordStar* will allocate to hold the document being edited? How

much memory can I allocate to a RAM drive and spooler without decreasing the memory available to hold a document? I have a 256K system.

Brian Freeman
Albuquerque, NM

A. To use *WordStar* with a RAM disk, you will need COMMAND.COM and all of the *WordStar* files, WS.COM, WSOVLY1 and WSMGGS. It is not necessary to leave large amounts of RAM for text because *WordStar* only works with a portion of the file in memory at one time. I do not know exactly the amount of memory *WordStar* uses for a text buffer when editing. I would suggest that you keep increasing your RAM disk until it is large enough to function and then leave it there. I have used a RAM disk on a 256K machine with *WordStar* and have never had a problem.

Q. Perhaps you can help me locate the source for replaceable print head ink roller pads for my Riteman Inforunner LQ printer. I know it would seem I'm asking the wrong people for help but I can't get a reply from the Inforunner California address printed in the owner's manual, and my dealer no longer carries this brand.

Richard E. Gladden
El Paso, TX

A. I talked to a computer dealer in the Detroit area who is still selling the Riteman printers. They advised that they can furnish ribbons and supplies for the printers. Contact: Richard J. Krywick, Command Computer Systems Inc., 28630 Ryan Road, Warren, Mich. 48092, (313) 573-8130.

Q. In the April '86 issue of SOFT SECTOR, Page 56, you showed how to use condensed print from DOS. What is the code to return the printer to standard print? Are there other codes I could use from DOS for my printer, such as page offset and bold print? Is there a list of such codes? Where would I find them?

I can see the possibilities of using my computer as a typewriter without using a word processing program, especially since my typewriter is not in the best of condition. I do have an excellent dump program, ASCII Printer from ProSoft Computer Sciences.

Mary M. Miller
Pompano Beach, FL

A. The code to return your Okidata printer to 10-pitch printing would be ^]^. This looks a little strange but it

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A. The files that you receive over your modem from Dialogue should load directly into *WordStar*. These should be just ASCII text which *WordStar* will load directly. If you were receiving binary files, then they would not load.

Q. One thing I like about *WordStar* is that it seems I'll never stop learning about it. Here is the latest: I ran a "DIR" on my *WordStar* data disk and found a file listed as B. I could not remember what was on the file and I was surprised to find that it contained over 46K bytes! Well, I started *WordStar* to see what the file contained, and to my surprise I found it was a collection of all the files on the disk tacked together in one file. Do you have any idea how this happened? If I knew how to do it again, I could use the procedure for printing out the contents of the entire disk at one time.

Cal Banyan
Grand Forks, ND

A. The way that you got one file on your disk with the filename of B that contained a copy of all of the files on that disk was at some time or other you tried to do a COPY *.* and did not type the correct

syntax. As a result, what you typed was interpreted as copy all of the files on the disk to one file called B.

Q. I use *CalcStar* and *EasyWriter* a lot. One day, after doing some word processing which had contained print symbols for compressed type, I used the "exit to DOS" procedure to return to the system prompt. I then booted *CalcStar* and added to a file. When I printed the *CalcStar* file, it was printed in compressed type! This is a very desirable thing to me. I would like to be able to use not only the compressed type, but also the variable line feed features of my printer with *CalcStar*. Is there something I can add to my AU TOEXEC.BAT file that will send the proper codes to my printer? It is a C. Itoh 8510A Prowriter.

One other question: Since I use *CalcStar* so much, it becomes a real bother every time the program is booted, to remove the cursor movement, commands and miscellaneous lists from the top section of the screen. Is there, to your knowledge, a patch to add or one of the *CalcStar* files to erase, that would eliminate that section upon boot up?

George H. Wheeler
Palmdale, CA

A. I am not aware of a way to get *CalcStar* to start with the command portion of the screen turned off. Possibly one of our readers can furnish this information.

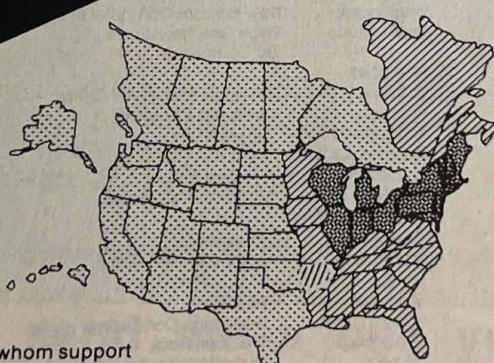
Sending printer codes from a batch file is an easy process. The following is a list of codes to set an NEC PC-8023A-C dot-matrix printer (which should be the same as your C. Itoh 8510A Prowriter).

^N = ESCAPE - N Turns on 10-Pitch Printing
^E = ESCAPE - E Turns on 12-Pitch Printing
^Q = ESCAPE - Q Turns on 17-Pitch Printing
^B = ESCAPE - B Sets 8 Lines Per Inch
^A = ESCAPE - A Sets 6 Lines Per Inch

Charlotte Stone, office manager for the Detroit office of the Shaw/Walker Co., has been using a Sanyo computer in her daily work routine since October 1983. Brian Stone has been using a variety of Sanyo computers since May 1983. Both have been involved with computers since their first purchase in July 1978.



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